Colour Television

Chassis

LC7.1E

LA

Service
Service
Service



H_16940_000.eps
080307

ServiceManual

Contents — Page

Contents — Page

Published by WS 0763 BG CD Customer Service Printed in the Netherlands Subject to modification EN 3122 785 16940

PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

Notes:
- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	:	LCD
Screen size	:	32" (82 cm), 16:9
	:	42" (107 cm), 16:9
Resolution (HxV pixels)	:	1366 x 768
Min. contrast ratio	:	4000:1 (32")
	:	5000:1 (42")
Min. light output (cd/m^2)	:	500
Typ. response time (ms)	:	8 (32")
	:	5 (42")
Viewing angle (HxV degrees)	:	178x178
Tuning system	:	PLL
TV Colour systems	:	PAL B/G, D/K, I
	:	SECAM B/G, D/K, L/L'
Video playback	:	NTSC
	:	PAL
	:	SECAM
Supported computer formats	:	WXGA (1366x768)
Supported video formats	:	640x480i - 1fH
	:	720x576i - 1fH
	:	640x480p - 2fH
	:	720x576p - 2fH
	:	1920x1080i - 2fH
	:	1280x720p - 3fH
Presets/channels	:	100 presets
Tuner bands	:	VHF
	:	UHF
	:	S-band
	:	Hyper-band

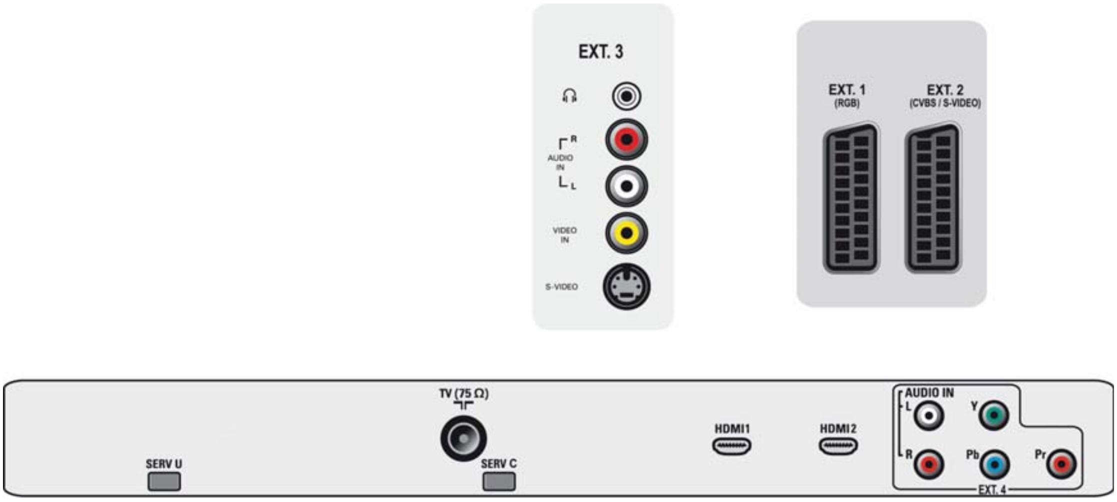
1.1.2 Sound

Sound systems	:	NICAM D/K, I, L/L'
	:	2CS D/K, B/G
Equalizer	:	7-bands
Maximum power (W_{RMS})	:	2 x 10

1.1.3 Miscellaneous

Power supply:		
- Mains voltage (V_{AC})	:	220 - 240
- Mains frequency (Hz)	:	50 / 60
Ambient conditions:		
- Temperature range (°C)	:	+5 to +40
- Maximum humidity	:	90% R.H.
Power consumption (values are indicative)		
- Normal operation (W)	:	≈ 140 (32")
	:	≈ 240 (42")
- Stand-by (W)	:	< 1
Dimensions (WxHxD cm)	:	80.5x54.6x11.5 (32")
	:	104.5x68.6x11.6 (42")
Weight (kg)	:	15.5 (32")
	:	25 (42")

1.2 Connection Overview



H_16940_005.eps
270207

Figure 1-1 Side and rear I/O connections

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Side Connections

EXT3: Headphone - Out

Bk	- Headphone	32 - 600 ohm / 10 mW

EXT3: Cinch: Video CVBS - In, Audio - In

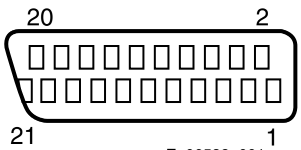
Rd	- Audio R	0.5 V_{RMS} / 10 kohm
Wh	- Audio L	0.5 V_{RMS} / 10 kohm
Ye	- Video CVBS	1 V_{PP} / 75 ohm

EXT3: S-Video (Hosiden): Video Y/C - In

1	- Ground Y	Gnd
2	- Ground C	Gnd
3	- Video Y	1 V_{PP} / 75 ohm
4	- Video C	0.3 V_{PP}P / 75 ohm

1.2.2 Rear Connections

EXT1: Video RGB - In, CVBS - In/Out, Audio - In/Out

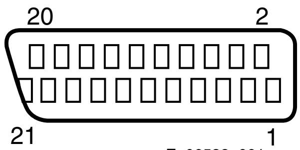


E_06532_001.eps
050404

Figure 1-2 SCART connector

1	- Audio R	0.5 V_{RMS} / 1 kohm
2	- Audio R	0.5 V_{RMS} / 10 kohm
3	- Audio L	0.5 V_{RMS} / 1 kohm
4	- Ground Audio	Gnd
5	- Ground Blue	Gnd
6	- Audio L	0.5 V_{RMS} / 10 kohm
7	- Video Blue	0.7 V_{PP} / 75 ohm
8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3
9	- Ground Green	Gnd
10	- Easylink P50	0 - 5 V / 4.7 kohm
11	- Video Green	0.7 V_{PP} / 75 ohm
12	- n.c.	
13	- Ground Red	Gnd
14	- Ground P50	Gnd
15	- Video Red	0.7 V_{PP} / 75 ohm
16	- Status/FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm
17	- Ground Video	Gnd
18	- Ground FBL	Gnd
19	- Video CVBS	1 V_{PP} / 75 ohm
20	- Video CVBS	1 V_{PP} / 75 ohm
21	- Shield	Gnd

EXT2: Video YC - In, CVBS - In/Out, Audio - In/Out



E_06532_001.eps
050404

Figure 1-3 SCART connector

1	- Audio R	0.5 V_{RMS} / 1 kohm
2	- Audio R	0.5 V_{RMS} / 10 kohm
3	- Audio L	0.5 V_{RMS} / 1 kohm
4	- Ground Audio	Gnd
5	- n.c.	
6	- Audio L	0.5 V_{RMS} / 10 kohm
7	- C-out	0.7 V_{PP} / 75 ohm
8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3
9	- n.c.	
10	- Easylink P50	0 - 5 V / 4.7 kohm
11	- n.c.	
12	- n.c.	
13	- n.c.	
14	- Ground P50	Gnd
15	- C	0.7 V_{PP} / 75 ohm
16	- Status/FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm
17	- Ground Video	Gnd

18	- Ground FBL	Gnd
19	- Video CVBS	1 V_{PP} / 75 ohm
20	- Video CVBS/Y	1 V_{PP} / 75 ohm
21	- Shield	Gnd

Service Connector (UART)

1	- UART_TX	Transmit
2	- Ground	Gnd
3	- UART_RX	Receive

Aerial - In

-	- IEC-type (EU)	Coax, 75 ohm

Service Connector (ComPair)

1	- SDA-S	I^2C Data (0 - 5 V)
2	- SCL-S	I^2C Clock (0 - 5 V)
3	- Ground	Gnd

HDMI 1 & 2: Digital Video, Digital Audio - In

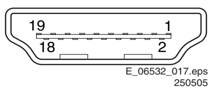


Figure 1-4 HDMI (type A) connector

1	- D2+	Data channel
2	- Shield	Gnd
3	- D2-	Data channel
4	- D1+	Data channel
5	- Shield	Gnd
6	- D1-	Data channel
7	- D0+	Data channel
8	- Shield	Gnd
9	- D0-	Data channel
10	- CLK+	Data channel
11	- Shield	Gnd
12	- CLK-	Data channel
13	- n.c.	
14	- n.c.	
15	- DDC_SCL	DDC clock
16	- DDC_SDA	DDC data
17	- Ground	Gnd
18	- +5V	
19	- HPD	Hot Plug Detect
20	- Ground	Gnd

EXT4: Cinch: Video YPbPr - In, Audio - In

Gn	- Video Y	1 V_{PP} / 75 ohm
Bu	- Video Pb	0.7 V_{PP} / 75 ohm
Rd	- Video Pr	0.7 V_{PP} / 75 ohm
Wh	- Audio L	0.5 V_{RMS} / 10 kohm
Rd	- Audio R	0.5 V_{RMS} / 10 kohm

1.3 Chassis Overview

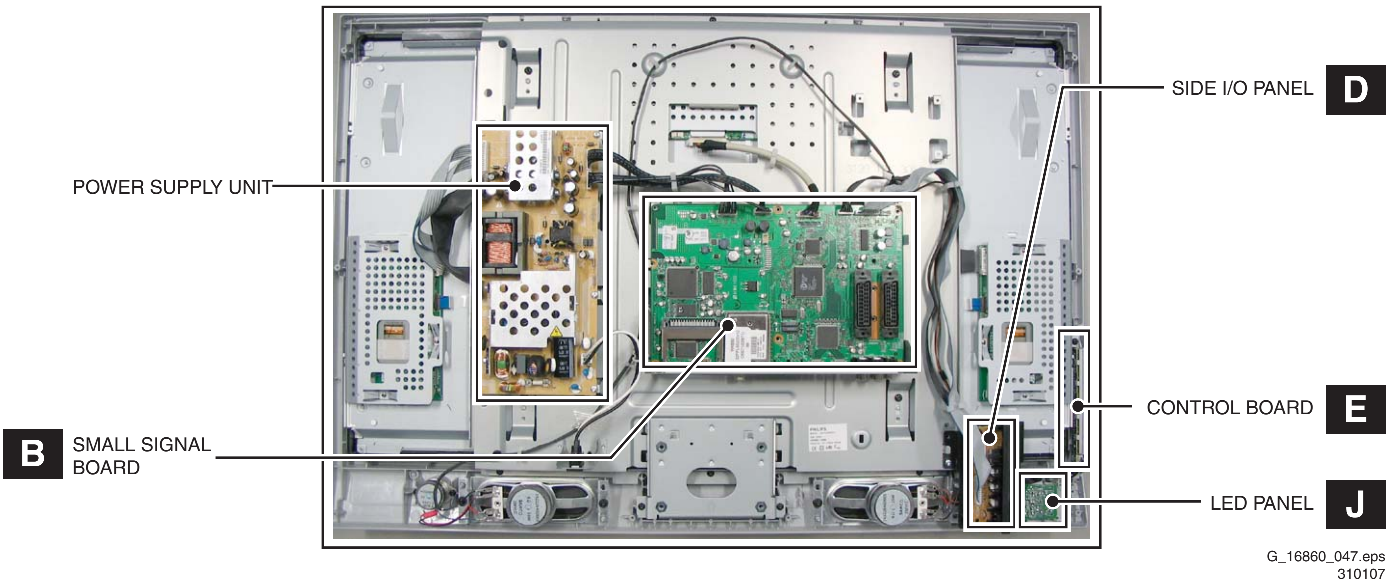


Figure 1-5 PWB/CBA locations (32” models)

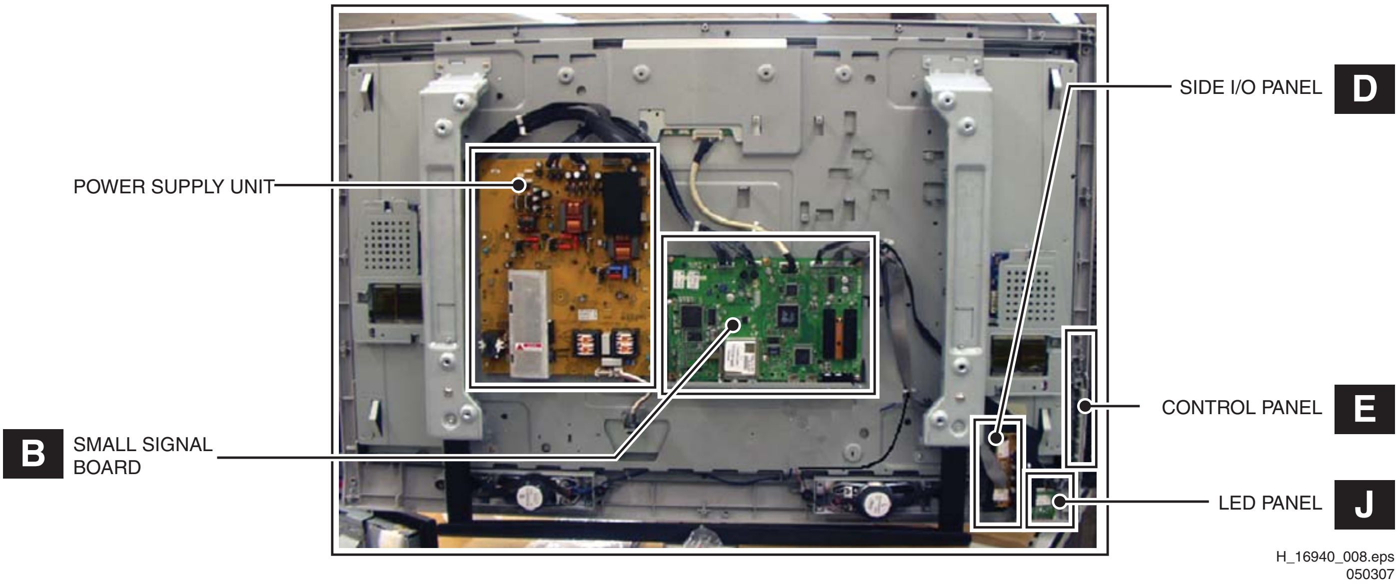


Figure 1-6 PWB/CBA locations (42" models)

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions

Safety regulations require the following **during** a repair:
- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:
- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the "on" position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
  4. Switch "off" the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
  – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  – Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⏉⏉) and without (⏉⏉) aerial signal. Measure the voltages in the power supply section both in normal operation (⏀) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.
- Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the “double-D symbol”, are trademarks of Dolby Laboratories.

2.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads (μ= $x10^{-6}$), nano-farads (n= $x10^{-9}$), or pico-farads (p= $x10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.3.3 BGA (Ball Grid Array) ICs

Introduction
For more information on how to handle BGA devices, visit this URL: *www.atyourservice.ce.philips.com* (needs subscription, not available for all regions). After login, select “Magazine”, then go to “Repair downloads”. Here you will find Information on how to deal with BGA-ICs.

BGA Temperature Profiles
For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the "Magazine", chapter "Repair downloads".
For additional questions please contact your local repair help desk.

2.3.4 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:
- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  – To reach a solder-tip temperature of at least 400°C.
  – To stabilize the adjusted temperature at the solder-tip.
  – To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed.

To avoid wear-out of tips, switch "off" unused equipment or reduce heat.

- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

2.3.5 Alternative BOM identification

The **third digit** in the serial number (example: AG**2**B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.
By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with.
If the third digit of the serial number contains the number "1" (example: AG**1**B033500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: AG**2**B0335000001), then the set has been produced according to B.O.M. no. 2. ***This is important for ordering the correct spare parts!***
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26= 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production center (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.



E_06532_024.eps
130606

Figure 2-1 Serial number (example)

2.3.6 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.
If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

2.3.7 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

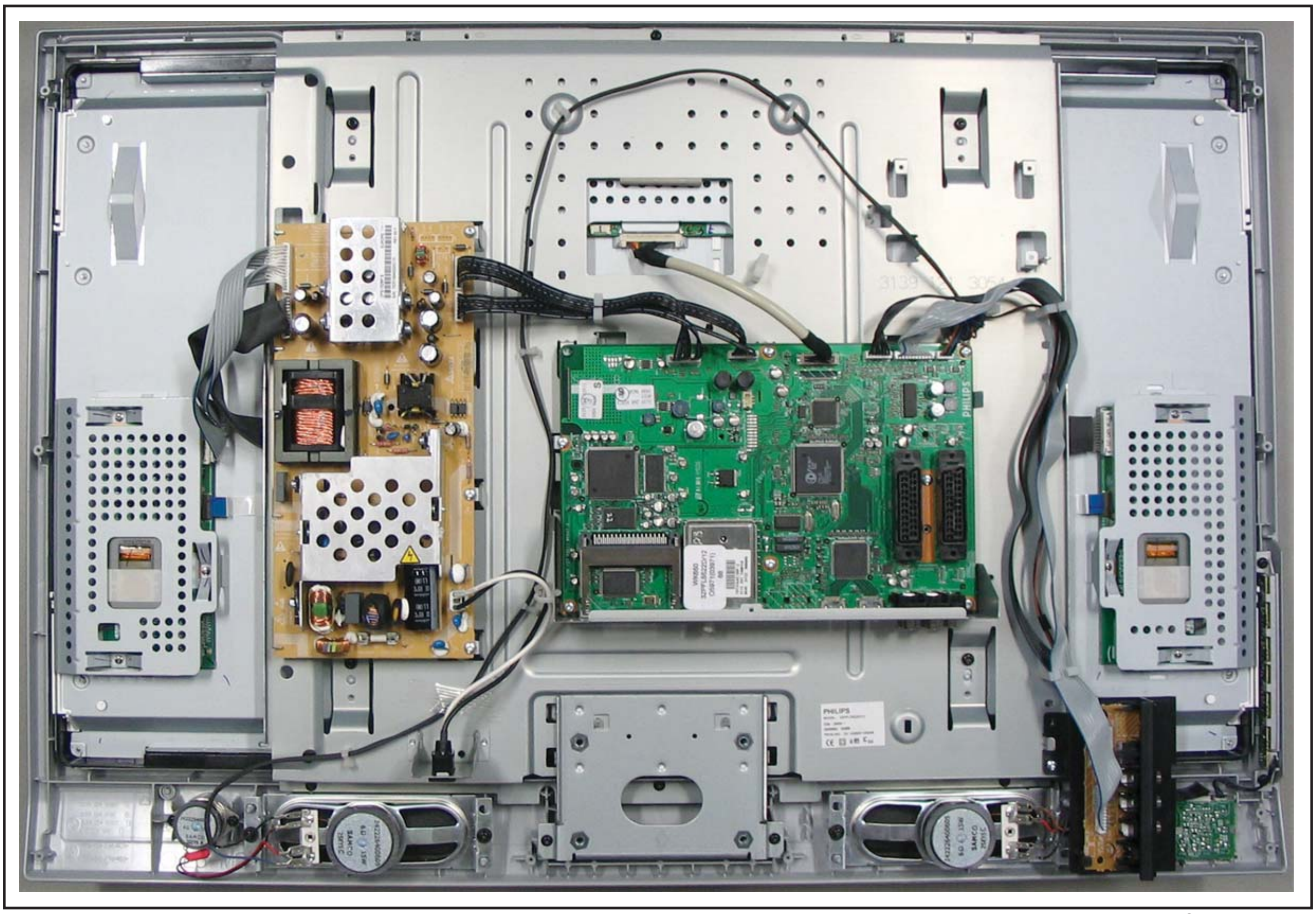
You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

4. Mechanical Instructions

Index of this chapter:

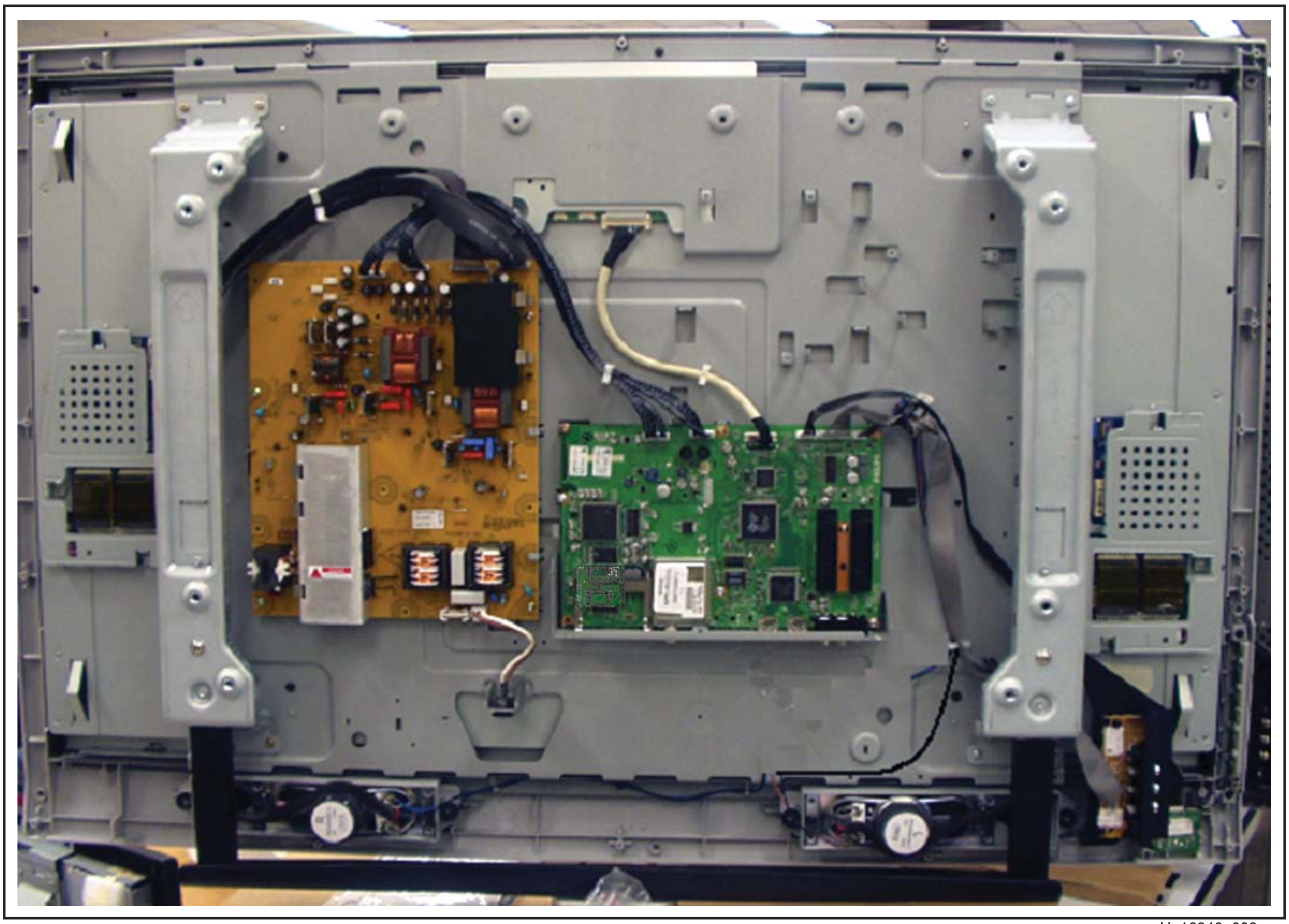
Notes:
- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order. They apply to the 32” sets.

4.1 Cable Dressing



G_16860_064.eps
310107

Figure 4-1 Cable dressing (32” models)



H_16940_009.eps
050307

Figure 4-2 Cable dressing (42” models)

4.2 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging.
- Foam bars (created for Service).
- Aluminium service stands (created for Service).

Note: the aluminium service stands can only be used when the set is equipped with so-called “mushrooms”. Otherwise use the original stand that comes with the set.

4.2.1 Foam Bars

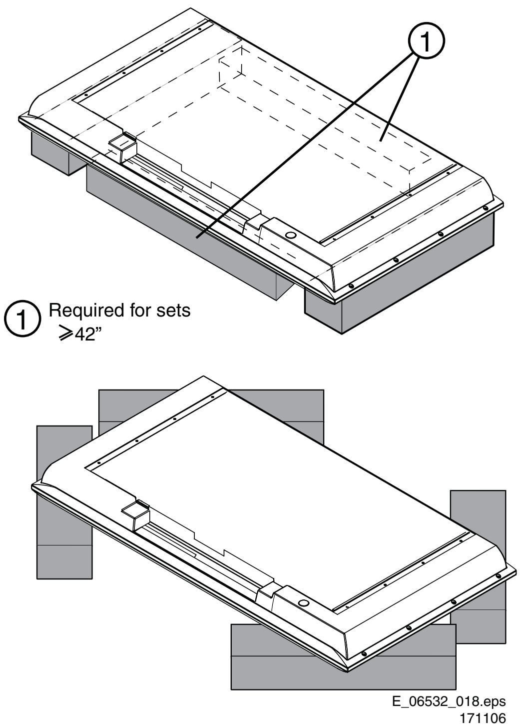


Figure 4-3 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. See figure “Foam bars” for details. Sets with a display of 42” and larger, require **four** foam bars [1]. Ensure that the foam bars are always supporting the cabinet and **never** only the display. **Caution:** Failure to follow these guidelines can seriously damage the display!
By laying the TV face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can monitor the screen.

4.2.2 Aluminium Stands

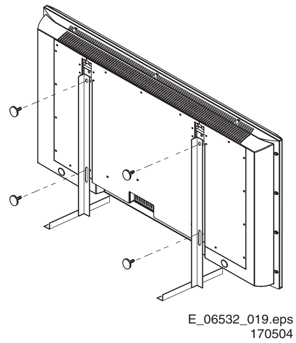


Figure 4-4 Aluminium stands (drawing of MkI)

The new MkII aluminium stands (not on drawing) with order code 3122 785 90690, can also be used to do measurements, alignments, and duration tests. The stands can be (dis)mounted quick and easy by means of sliding them in/out the "mushrooms". The new stands are backwards compatible with the earlier models.
Important: For (older) FTV sets without these "mushrooms", it is obligatory to use the provided screws, otherwise it is possible to damage the monitor inside!

4.3 Assy/Panel Removal

4.3.1 Rear Cover

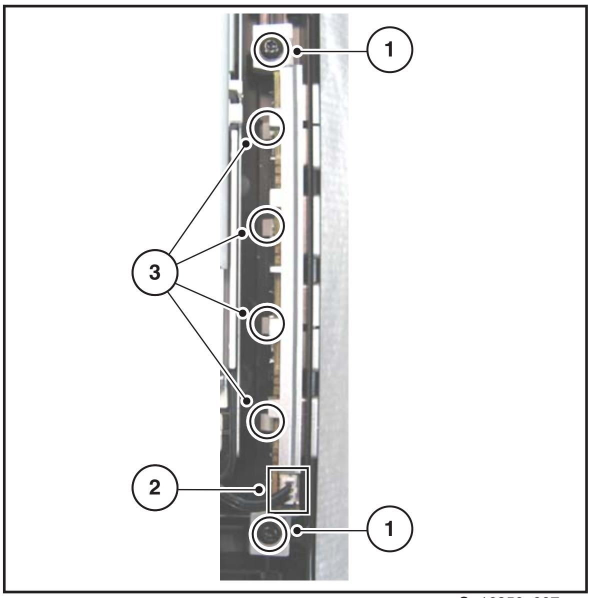
Warning: Disconnect the mains power cord before you remove the rear cover.

1. Place the TV set upside down on a table top, using the foam bars (see part "Service Position").
2. Remove rear cover screws and the stand (if mounted).
3. Remove rear cover.

4.3.2 Keyboard Control Panel

1. Remove the rear cover, as described earlier.
2. Refer to fig. “Keyboard control panel“ below.
3. Remove the T10 parker screws [1].
4. Unplug connector [2].
5. Remove the unit.
6. Release clips [3] and remove the board.

When defective, replace the whole unit.



G_16850_007.eps
090207

Figure 4-5 Keyboard control panel



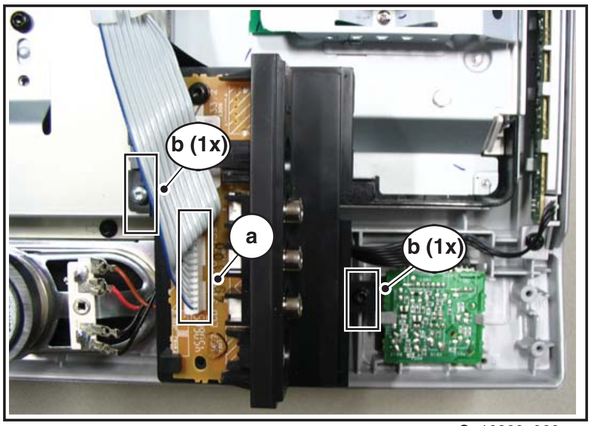
G_16860_075.eps
010207

Figure 4-7 Side I/O panel [1/3] top side

4.3.3 Side I/O Panel

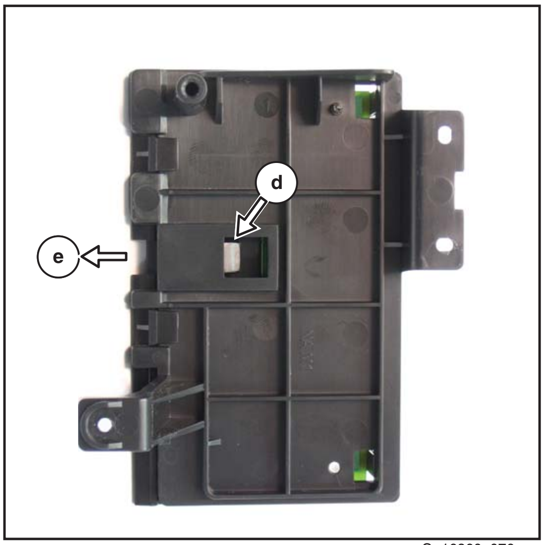
1. Remove the rear cover, as described earlier.
2. Unplug connector [a].
3. Remove screws [b] and remove the complete module. One of the screws is T10 tapping, the other one is T10 parker. See fig. “Side I/O module”.
4. Remove T10 parker screw [c]. See fig. “Side I/O panel 1”.
5. Push catch [d] (located at the underside of the bracket) and slide the unit to the right from its bracket [e]. See fig. “Side I/O panel 2”.
6. To remove the PWB from its bracket, you have to lift the catch [f] loacted on top of the headphone connector. At the same time, slide the PWB out of its bracket [g]. See fig. “Side I/O panel 3”.

When defective, replace the whole unit.



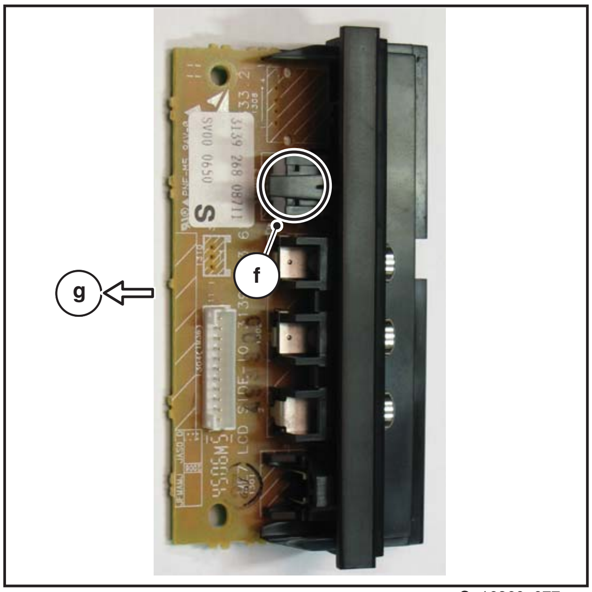
G_16860_066.eps
010207

Figure 4-6 Side I/O module



G_16860_076.eps
010207

Figure 4-8 Side I/O panel [2/3] bottom side



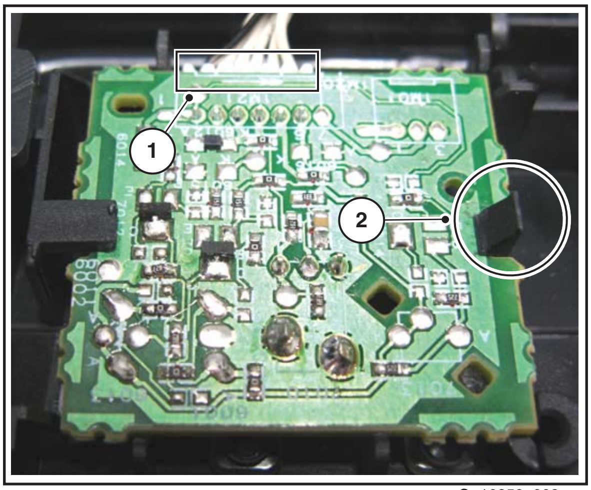
G_16860_077.eps
010207

Figure 4-9 Side I/O panel [3/3]

4.3.4 IR/LED Panel

1. Remove the rear cover, as described earlier.
2. Refer to fig. “IR/LED panel“ below.
3. Unplug connector(s) [1].
4. Release clip [2] and remove the board.

When defective, replace the whole unit.

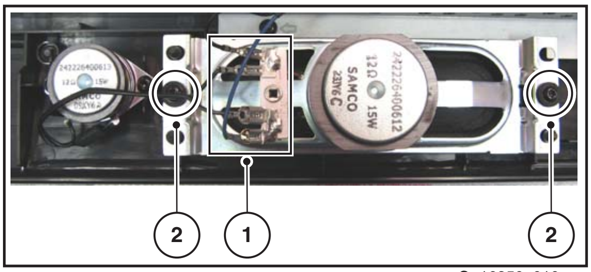


G_16850_009.eps
110107

Figure 4-10 IR/LED panel

4.3.5 Mid-range Speakers

1. Remove the rear cover, as described earlier.
2. Refer to fig. “Mid-range speakers“ below.
3. Unplug connectors [1].
4. Remove T10 parker screws [2].

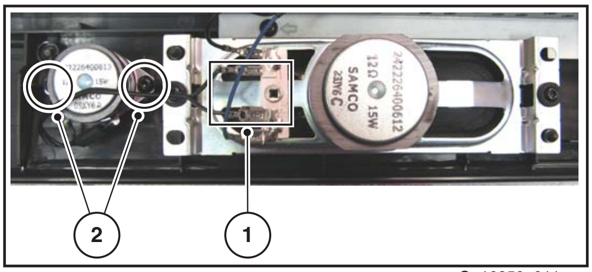


G_16850_010.eps
110107

Figure 4-11 Mid-range speakers

4.3.6 Tweeters

1. Remove the rear cover, as described earlier.
2. Refer to fig. “Tweeters” below.
3. Unplug connectors [1].
4. Remove T10 parker screws [2].

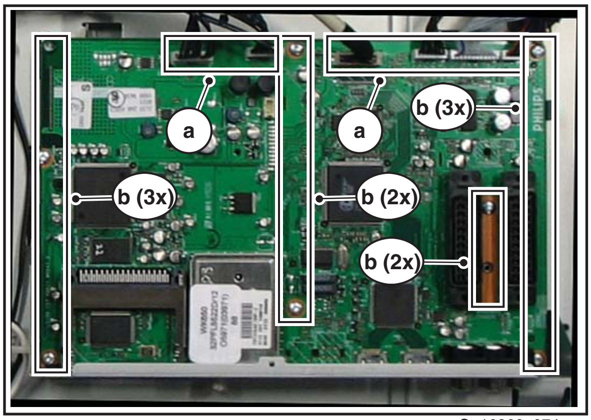


G_16850_011.eps
110107

Figure 4-12 Tweeters

4.3.7 Small Signal Board (SSB)

1. Remove the rear cover, as described earlier.
2. Refer to fig. “SSB removal“ below.
3. Disconnect all cables [a] on the SSB.
4. Remove the T10 tapping screws [b] that hold the SSB. See Figure “SSB removal”.
5. Remove the screws that hold the CINCH and HDMI connectors at the connector panel.
6. Lift the SSB from the set.

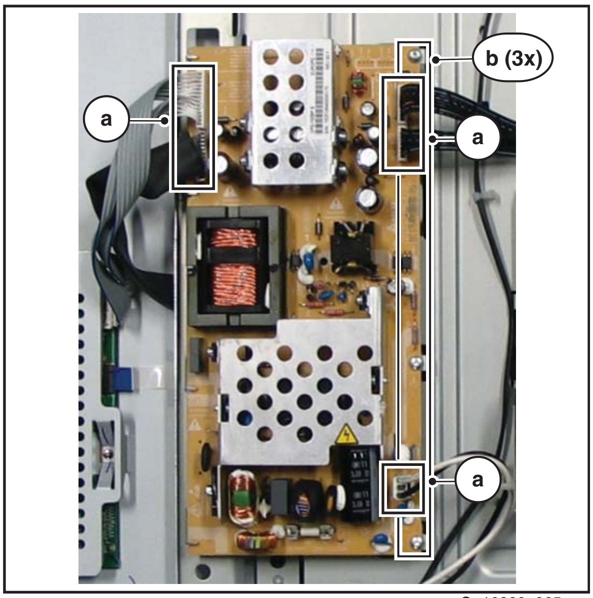


G_16860_074.eps
010207

Figure 4-13 SSB removal

4.3.8 Main Supply Panel

1. Remove the rear cover, as described earlier.
2. Refer to fig. “Main supply panel“ below.
3. Unplug cables [a].
4. Remove the fixation screws [b].
5. Take the board out (it hinges at the left side).

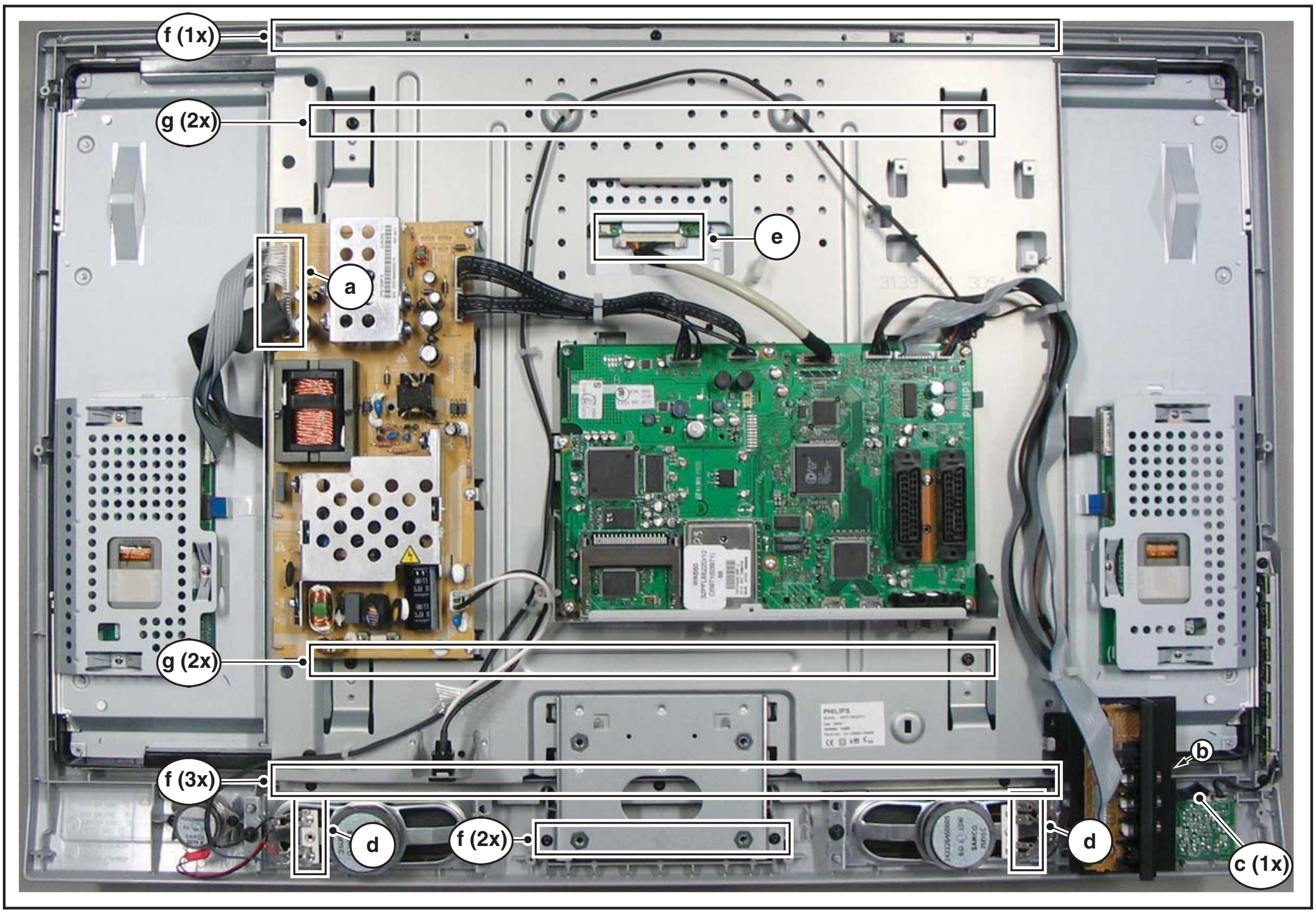


G_16860_065.eps
010207

Figure 4-14 Main supply panel

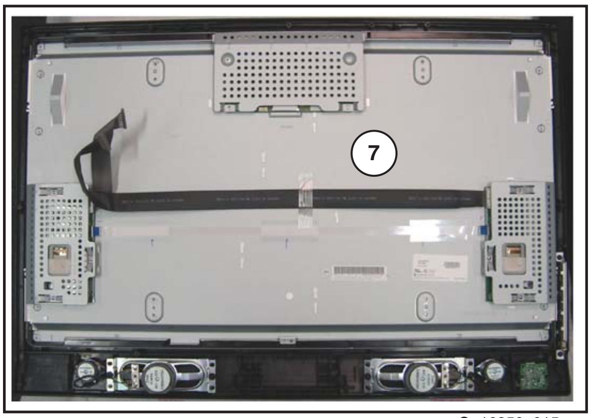
4.3.9 LCD Panel

1. Remove the rear cover, as described earlier.
2. Refer to fig. “LCD panel“ below.
3. Unplug the connectors on the Main Supply Panel [a] and the LED & IR board [c].
4. Unplug the outer connectors [d] from the mid-range loudspeakers.
5. **Do NOT forget** to unplug the LVDS connector [e] from the SSB. **Important:** Be careful, as this is a very fragile connector!
6. Remove T10 parker screw [b] that holds the Side I/O module bracket.
7. Remove T10 parker screws [f] of the central sub-frame.
8. Remove LCD panel fixation screws [g] and lift the complete central sub-frame from the set (incl. the PSU, SSB, and Side I/O boards and wiring).
9. Lift the LCD panel [7] from the front cabinet.



G_16860_067.eps
310107

Figure 4-15 LCD panel [1/2]



G_16850_015.eps
110107

Figure 4-16 LCD panel [2/2]

4.4 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position. See figure "Cable dressing".
- Pay special attention not to damage the EMC foams. Ensure that EMC foams are mounted correctly (one is located above the LVDS connector on the display, between the LCD display and the metal sub-frame).

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Test Points

In the chassis schematics and layout overviews, the test points (Fxxx) are mentioned. In the schematics, test points are indicated with a rectangular box around “Fxxx” or “Ixxx”, in the layout overviews with a “half-moon” sign.
As most signals are digital, it will be difficult to measure waveforms with a standard oscilloscope. Several key ICs are capable of generating test patterns, which can be controlled via ComPair. In this way it is possible to determine which part is defective.

Perform measurements under the following conditions:
- Service Default Mode.
- Video: Colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

The Service Mode feature is split into four parts:
- Service Default Mode (SDM).
- Service Alignment Mode (SAM).
- Customer Service Mode (CSM) and Digital Customer Service Mode (DCSM).
- Computer Aided Repair Mode (ComPair).

SDM and SAM offer features, which can be used by the Service engineer to repair/align a TV set. Some features are:
- A pre-defined situation to ensure measurements can be made under uniform conditions (SDM).
- Activates the blinking LED procedure for error identification when no picture is available (SDM).
- The possibility to overrule software protections when SDM was entered via the Service pins.
- Make alignments (e.g. white tone), (de)select options, enter options codes, reset the error buffer (SAM).
- Display information (“SDM” or “SAM” indication in upper right corner of screen, error buffer, software version, operating hours, options and option codes, submenus).

The (D)CSM is a Service Mode that can be enabled by the consumer. Instructions on how to enable the CSM can be given by telephone by either the dealer or the P3C (Philips Customer Care Center). The CSM displays diagnosis information, which the customer can forward to the dealer/P3C. In CSM mode, “CSM”, is displayed in the top right corner of the screen.

The information provided in CSM and the purpose of CSM is to:
- Increase the home repair hit rate
- Decrease the number of nuisance calls
- Solved customers' problem without home visit

ComPair Mode is used for communication between a computer and a TV on I2C /UART level and can be used by a Service engineer to quickly diagnose the TV set by reading out error codes, read and write in NVMs, communicate with ICs and the uP (PWM, registers, etc.), and by making use of a faultfinding database. It will also be possible to up and download the software of the TV set via I2C with help of ComPair. To do this, ComPair has to be connected to the TV set via the ComPair connector, which will be accessible through the rear of the set (without removing the rear cover).

5.2.1 General

Some items are applicable to all Service Modes or are general. These are listed below.

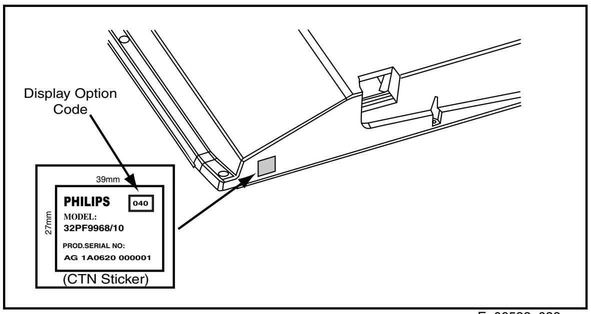
Life Timer
During the life time cycle of the TV set, a life timer is kept. This life timer counts the normal operation hours, but not the Stand-by hours. The actual value of the life timer is displayed in SDM and CSM in a decimal value. Every two soft-resets should increase the hour by +1. Minimal five digits are displayed.

Software Identification, Version, and Cluster
The software identification, version, and cluster will be shown in the main menu display of SDM, SAM, and CSM.
The screen will show: “**AAAABCD X.YY**”, where:
- **AAAA** is the chassis name: LC71 for analogue range (non-DVB), LC72 for digital range (DVB).
- **B** is the region indication: E= Europe, A= AP/China, U= NAFTA, L= LATAM.
- **C** is the display indication: L= LCD, P= Plasma.
- **D** is the language/features indication: 1= standard, H= 1080p full HD.
- **X** is the main version number: The main version number is updated with a major change of specification (incompatible with the previous software version). Numbering will go from 1 - 9 then from A - Z.
  - If the main version number changes, the new version number is written in the NVM
  - If the main version number changes, the default settings are loaded
- **YY** is the sub version number: The sub version number is updated with a minor change (backwards compatible with the previous versions) Numbering will go from 00 - 99.
  - If the sub version number changes, the new version number is written in the NVM
  - If the NVM is fresh, the software identification, version, and cluster will be written to NVM

Display Option Code Selection

When after a display exchange, the display option code is not properly set, it will result in a TV with “no display”. Therefore, **it is required** to set this display option code after such a repair.

To do so, press the following key sequence on a standard RC transmitter: “**062598**” directly followed by **MENU** and “**xxx**”, where “xxx” is a 3 digit decimal value of the panel type (see first column in table “Display Code Overview” or sticker on the side/bottom of the cabinet). When the value is properly accepted and stored in NVM, the set will switch to Stand-by, to indicate that the process has been completed successfully.



E_06532_038.eps
290107

Figure 5-1 Location of Display Option Code sticker

Table 5-1 Display option code overview

Display option	HEX	Display type	Brand	Size	Vert. resolution	Hor. resolution	Type number	12 NC
045	2D	LCD	LPL	26	768p	1366	LC260WX2-SLB2	9322 234 13682
046	2E	LCD	LPL	32	768p	1366	LC320W01-SL06	9322 230 03682
068	44	LCD	CMO	26	768p	1366	V260B1-L03	9322 249 37682
069	45	LCD	CMO	32	768p	1366	V315B1 L05	9322 248 65682
070	46	LCD	CPT	32	768p	1366	CLLAA320WB02P	9322 245 31682
071	47	LCD	LPL	37	768p	1366	LC370WX1-SLB1	9322 246 96682
072	48	LCD	AUO	37	768p	1366	T370XW02V5	9322 249 77682
073	49	LCD	LPL	42	768p	1366	LC420WX3-SLA1	9322 246 97682
076	4B	LCD	AUO	42	768p	1366	T420XW01V8	9322 249 10682
083	53	PDP	SDI	42	768p	1024	S42AX-YD04(PS-426-PH)	9322 246 76682
085	55	PDP	SDI	50	768p	1366	S50HW-YD05(PS-506-PH)	9322 246 81682
091	5B	LCD	AUO	32	768p	1366	T315XW02VD	9322 249 06682
093	5D	LCD	LPL	42	1080p	1920	LC420WU2-SLA1	9322 246 84682
103	67	LCD	LPL	20	480p	640	LC201V02-SDB1	9322 242 65682
105	69	LCD	CMO	19	900p	1440	TPM190A1-L02	9965 000 43654
106	6A	LCD	AUO	23	768p	1366	T230XW01V3	9322 249 79682
107	6B	LCD	LPL	42	768p	1366	LC420WX5-SLD1	9322 249 09682

During this algorithm, the NVM-content must be filtered, because several items in the NVM are TV-related and not SSB-related (e.g. Model and Prod. S/N). Therefore, “Model” and “Prod. S/N” data is changed into “See Type Plate”.
In case a call centre or consumer reads “See Type Plate” in CSM mode, he needs to look to the side/bottom sticker to identify the set, for further actions.

5.2.2 Service Default Mode (SDM)

Purpose

Set the TV in SDM mode in order to be able to:

- Create a predefined setting for measurements to be made.
- Override software protections.
- Start the blinking LED procedure.
- Read the error buffer.
- Check the life timer.

Specifications

Table 5-2 SDM default settings

Region	Freq. (MHz)	Default syst.
Europe (except France), AP-PAL/-Multi	475.25	PAL B/G
France		SECAM L
NAFTA, AP-NTSC	61.25 (channel 3)	NTSC M
LATAM		PAL M

- Set linear video and audio settings to 50 %, but volume to 25 %. Stored user settings are not affected.
- All service-unfriendly modes (if present) are disabled, since they interfere with diagnosing/repairing a set.. These service unfriendly modes are:
  - (Sleep) timer.
  - Blue mute/Wall paper.
  - Auto switch “off” (when there is no “ident” signal).
  - Hotel or hospital mode.
  - Child lock or parental lock (manual or via V-chip).
  - Skipping, blanking of “Not favourite”, “Skipped” or “Locked” presets/channels.
  - Automatic storing of Personal Preset or Last Status settings.
  - Automatic user menu time-out (menu switches back/ OFF automatically.
  - Auto Volume levelling (AVL).

How to Activate

To activate SDM, use **one** of the following methods:

- Press the following key sequence on the remote control transmitter: “**062596**” directly followed by the **MENU** button (do not allow the display to time out between entries while keying the sequence).
- Short one of the “Service” jumpers on the TV board during cold start (see Figures “Service jumper”). Then press the mains button (remove the short after start-up). **Caution**: Activating SDM by shorting “Service” jumpers will override the DC speaker protection (error 1), the General I2C error (error 4), and the Trident video processor error (error 5). When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.

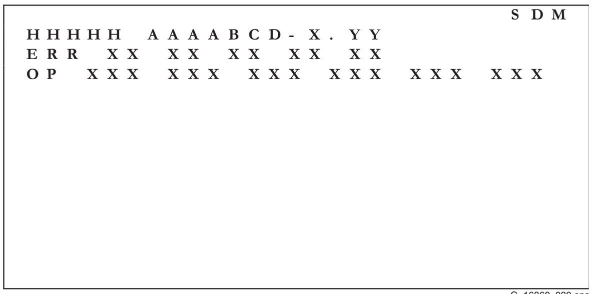


G_16860_027.eps
260107

Figure 5-2 Service jumper (SSB component side)

On Screen Menu

After activating SDM, the following screen is visible, with SDM in the upper right corner of the screen to indicate that the television is in Service Default Mode.



G_16860_030.eps
260107

Figure 5-3 SDM menu

Menu explanation:

- **HHHHH**: Are the operating hours (in decimal).
- **AAAABCD-X.YY**: See paragraph “Service Modes” -> “General” -> “Software Identification, Version, and Cluster” for the SW name definition.
- **SDM**: The character “SDM” to indicate that the TV set is in Service mode.
- **ERR**: Shows all errors detected since the last time the buffer was erased. Five errors possible.
- **OP**: Used to read-out the option bytes. See “Options” in the Alignments section for a detailed description. Seven codes are possible.

How to Navigate

As this mode is read only, there is not much to navigate. To switch to other modes, use one of the following methods:

- Command MENU from the user remote will enter the normal user menu (brightness, contrast, colour, etc...) with “SDM” OSD remaining, and pressing MENU key again will return to the last status of SDM again.
- To prevent the OSD from interfering with measurements in SDM, command “OSD” (“STATUS” for NAFTA and LATAM) from the user remote will toggle the OSD “on/off” with “SDM” OSD remaining always “on”.
- Press the following key sequence on the remote control transmitter: “**062596**” directly followed by the **OSD/i+** button to switch to SAM (do not allow the display to time out between entries while keying the sequence).

How to Exit

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or on the television set.
If you switch the television set “off” by removing the mains (i.e., unplugging the television), the television set will remain in SDM when mains is re-applied, and the error buffer is not cleared. The error buffer will only be cleared when the “clear” command is used in the SAM menu.

Note:

- If the TV is switched “off” by a power interrupt while in SDM, the TV will show up in the last status of SDM menu as soon as the power is supplied again. The error buffer will not be cleared.
- In case the set is in Factory mode by accident (with “F” displayed on screen), by pressing and hold “VOL-“ and “CH-” together should leave Factory mode.

5.2.3 Service Alignment Mode (SAM)

Purpose
- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications
- Operation hours counter (maximum five digits displayed).
- Software version, error codes, and option settings display.
- Error buffer clearing.
- Option settings.
- Software alignments (Tuner, White Tone, and Audio).
- NVM Editor.
- ComPair Mode switching.
- Set the screen mode to full screen (all contents on screen are viewable).

How to Activate
To activate SAM, use one of the following methods:
- Press the following key sequence on the remote control transmitter: "**062596**" directly followed by the **OSD/ STATUS/INFO/i+** button (it depends on region which button is present on the RC). Do not allow the display to time out between entries while keying the sequence.
- Or via ComPair.

After entering SAM, the following screen is visible, with SAM in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

```
                                              SAM
LLLLL   AAAABCD-X.YY
ERR  XX   XX  XX  XX  XX
OP  XXX  XXX  XXX  XXX  XXX  XXX

Clear            >  Yes
Options          >
Tuner            >
RGB Align        >
NVM Editor       >
Compair          >
SW EVENTS        >
```

G_16860_031.eps
260107

Figure 5-4 SAM menu

Menu explanation:
1. **LLLLL.** This represents the run timer. The run timer counts normal operation hours, but does not count Stand-by hours.
2. **AAAABCD-X.YY.** See paragraph "Service Modes" -> "General" -> "Software Identification, Version, and Cluster" for the SW name definition.
3. **SAM.** Indication of the Service Alignment Mode.
4. **ERR (ERRor buffer).** Shows all errors detected since the last time the buffer was erased. Five errors possible.
5. **OP (Option Bytes).** Used to read-out the option bytes. See "Options" in the Alignments section for a detailed description. Seven codes are possible.
6. **Clear.** Erases the contents of the error buffer. Select the CLEAR menu item and press the MENU RIGHT key. The content of the error buffer is cleared.
7. **Options.** Used to set the option bits. See "Options" in the "Alignments" chapter for a detailed description.
8. **Tuner.** Used to align the tuner. See "Tuner" in the "Alignments" chapter for a detailed description.
9. **RGB Align.** Used to align the White Tone. See "White Tone" in the "Alignments" chapter for a detailed description.
10. **NVM Editor.** Can be used to change the NVM data in the television set. See also paragraph "Fault Finding and Repair Tips" further on.
11. **ComPaIr.** Can be used to switch the television to "In Application Programming" mode (IAP), for software uploading via ComPair. Read paragraph "Service Tools" -> "ComPair". **Caution:** When this mode is selected without ComPair connected, the TV will be blocked. Remove the AC power to reset the TV.
12. **SW Events.** Only to be used by development to monitor SW behaviour during stress test.

How to Navigate
- In the SAM menu, select menu items with the MENU UP/ DOWN keys on the remote control transmitter. The selected item will be indicated. When not all menu items fit on the screen, use the MENU UP/DOWN keys to display the next / previous menu items.
- With the MENU LEFT/RIGHT keys, it is possible to:
  – Activate the selected menu item.
  – Change the value of the selected menu item.
  – Activate the selected submenu.
- When you press the MENU button twice while in top level SAM, the set will switch to the normal user menu (with the SAM mode still active in the background). To return to the SAM menu press the MENU button.
- Command "OSD/i+" key from the user remote will toggle the OSD "on/off" with "SAM" OSD remaining always "on".
- Press the following key sequence on the remote control transmitter: "**062596**" directly followed by the **MENU** button to switch to SDM (do not allow the display to time out between entries while keying the sequence).

How to Store SAM Settings
To store the settings changed in SAM mode (except the OPTIONS settings), leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set.

How to Exit
Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.

Note:
- When the TV is switched "off" by a power interrupt while in SAM, the TV will show up in "normal operation mode" as soon as the power is supplied again. The error buffer will not be cleared.
- In case the set is in Factory mode by accident (with "F" displayed on screen), by pressing and hold "VOL-" and "CH-" together should leave Factory mode.

5.2.4 Customer Service Mode (CSM)

Purpose
The Customer Service Mode shows error codes and information on the TV's operation settings. A call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps them to diagnose problems and failures in the TV before making a service call. The CSM is a read-only mode; therefore, modifications are not possible in this mode.

Specifications
- Ignore "Service unfriendly modes".
- Line number for every line (to make CSM language independent).
- Set the screen mode to full screen (all contents on screen are viewable).
- After leaving the Customer Service Mode, the original settings are restored.
- Possibility to use "CH+" or "CH-" for channel surfing, or enter the specific channel number on the RC.

How to Activate
To activate CSM, press the following key sequence on the remote control transmitter: "**123654**" (do not allow the display to time out between entries while keying the sequence).

Upon entering the Customer Service Mode, the following screen will appear:

```
                                                    CSM
1    MODEL  : 32PFL5522D/10
2    PROD  S/N: AG1A0712123456
3    SW  ID  : LC71EL1-1.xx
4    OP      : XXX  XXX  XXX  XXX  XXX  XXX  XXX
5    CODES  : XX  XX  XX  XX  XX
6    SSB     : 3139  127  12341
7    NVM     : XXXXXXXX
8    Flash  Data: XX.XX.XX.XX
9    LIFE  TIMER: LLLL
10   TUNER  : WEAK/GOOD/STRONG
11   SYSTEM: PAL/NTSC/SECAM
12   SOUND  : MONO/STEREO/NICAM
13   HDAU    : YES/NO
14   FORMAT: XXXXXXXX
```

G_16860_032.eps
210207

Figure 5-5 CSM menu

Menu Explanation

1. **MODEL.** Type number, e.g. 32PFL5522D/10. (*)
2. **PROD S/N.** Product serial no., e.g. AG1A0712123456. (*)
3. **SW ID.** Software cluster and version is displayed.
4. **OP.** Option code information.
5. **CODES.** Error buffer contents.
6. **SSB.** Indication of the SSB factory identification code (12nc). (*)
7. **NVM.** The NVM software version no.
8. **Flash Data.** PQ (picture quality) and AQ (audio quality) data version. This is a sub set of the main SW.
9. **LIFE TIMER.** Operating hours indication.
10. **TUNER.** Indicates the tuner signal condition: “Weak” when signal falls below threshold value, “Medium” when signal is at mid-range, and “Strong” when signal falls above threshold value.
11. **SYSTEM.** Gives information about the video system of the selected transmitter (PAL/SECAM/NTSC).
12. **SOUND.** Gives information about the audio system of the selected transmitter (MONO/STEREO/NICAM).
13. **HDAU.** HDMI audio stream detection. “YES” means audio stream detected. “NO” means no audio stream present. Only displayed when HDMI source is selected.
14. **FORMAT.** Gives information about the video format of the selected transmitter (480i/480p/720p/1080i).
15. **HD SW ID.** Software version of the 1080p full HD module (when present).
16. **Reserved.**
17. **Reserved.**
18. **Reserved.**

(*) If an NVM IC is replaced or initialised, this data must be re-written to the NVM. ComPair will foresee in a possibility to do this.

How to Exit

To exit CSM, use one of the following methods:

- Press the MENU button twice, or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 Service Tools

5.3.1 ComPair

Introduction

ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products. and offers the following:

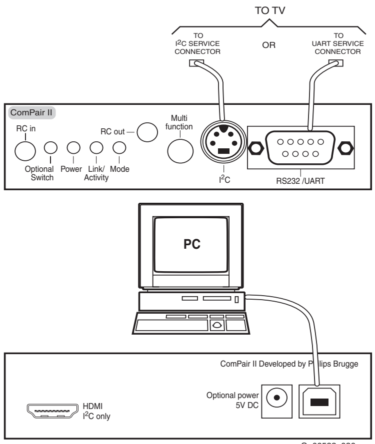
1. ComPair helps you to quickly get an understanding on how to repair the chassis in a short and effective way.
2. ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. You do not have to know anything about I2C or UART commands yourself, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the uP is working) and all repair information is directly available.
4. ComPair features TV software up possibilities.

Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The (new) ComPair II interface box is connected **to the PC** via an USB cable. For the TV chassis, the ComPair interface box and the TV communicate via a bi-directional cable via the service connector(s).
The ComPair fault finding program is able to determine the problem of the defective television, by a combination of automatic diagnostics and an interactive question/answer procedure.

How to Connect

This is described in the chassis fault finding database in ComPair.



G_06532_036.eps
260107

Figure 5-6 ComPair II interface connection

Caution: It is compulsory to connect the TV to the PC as shown in the picture above (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be blown!

How to Order

ComPair II order codes:

- ComPair II interface: 3122 785 91020.
- ComPair32 CD (update): 3122 785 60160.
- ComPair interface cable: 3122 785 90004.
- ComPair interface extension cable: 3139 131 03791.
- ComPair UART interface cable: 3122 785 90630.

Note: If you encounter any problems, contact your local support desk

5.3.2 LVDS Tool

Introduction

This Service tool (also called “ComPair Assistant 1“) may help you to identify, in case the TV does not show any picture, whether the Small Signal Board (SSB) **or** the display of a Flat TV is defective. Thus to determine if LVDS, RGB, and sync signals are okay.
Furthermore it is possible to program EPLDs with this tool (Byte blaster). Read the user manual for an explanation of this feature.

When operating, the tool will show a small (scaled) picture on a VGA monitor. Due to a limited memory capacity, it is not possible to increase the size when processing high-resolution

LVDS signals (> 1280x960). Below this resolution, or when a DVI monitor is used, the displayed picture will be full size.

How to Connect

Connections are explained in the user manual, which is packed with the tool. The LVDS cables included in the package cover most chassis. For some chassis, a separate cable must be ordered.

Note: To use the LVDS tool, you must have ComPair release 2004-1 (or later) on your PC (engine version >= 2.2.05).
For every TV type number and screen size, one must choose the proper settings via ComPair. The ComPair file will be updated regularly with new introduced chassis information.

How to Order

- LVDS tool (incl. two LVDS cables: 31p and 20p, covering chassis BJx.x, EJx.x, FJx.x and LC4.1): 3122 785 90671.
- LVDS tool Service Manual: 3122 785 00810.
- LVDS cable 20p/DF -> 20p/DF (standard with tool): 3122 785 90731.
- LVDS cable 31p/FI -> 31p/FI (standard with tool): 3122 785 90662.

For other chassis, a separare LVDS cable must be ordered. Refer to table “LVDS cable order number” for an overview of all deliverable cables.

Table 5-3 LVDS cable order number

Chassis	LVDS cable order number	Remarks
BJ2.4	3122 785 90662[1]	
BJ2.5	3122 785 90662[1]	
BJ3.0	3122 785 90662[1]	
BJ3.1	3122 785 90662[1]	
EJ2.0	3122 785 90662[1]	
EJ3.0	3122 785 90662[1]	
EL1.1	3122 785 90662[1] / 3122 785 90821	
FJ3.0	3122 785 90662[1]	
FTL2.4	3122 785 90662[1,2]	
LC4.1	3122 785 90731[1] / 3122 785 90851	
LC4.3	3122 785 90821	
LC4.31	3122 785 90821	
LC4.41	3122 785 90662[1,2] / 3122 785 90851	only for 26 & 32” sets
LC4.8	3122 785 90662[1,2] / 3122 785 90851	
LC4.9	3122 785 90662[1,2] / 3122 785 90851	MFD variant only
LC7.2	tbd	
JL2.1	3122 785 90861	

Notes

1. Included in LVDS tool package (order code 3122 785 90671)
2. Pins 27 and 28 should be grounded or not connected.

5.4 Error Codes

5.4.1 Introduction

Error codes are required to indicate failures in the TV set. In principle a unique error code is available for every:

- Activated protection.
- Failing I2C device.
- General I2C error.
- SDRAM failure.

The last five errors, stored in the NVM, are shown in the Service menu’s. This is called the error buffer.
The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.
An error will be added to the buffer if this error differs from any error in the buffer. The last found error is displayed on the left.
An error with a designated error code may **never** lead to a deadlock situation. This means that it must always be diagnosable (e.g. error buffer via OSD or blinking LED procedure, ComPair to read from the NVM).
In case a failure identified by an error code automatically results in other error codes (cause and effect), only the error code of the MAIN failure is displayed.

Example: In case of a failure of the I2C bus (CAUSE), the error code for a “General I2C failure” and “Protection errors” is displayed. The error codes for the single devices (EFFECT) is not displayed. All error codes are stored in the same error buffer (TV’s NVM) except when the NVM itself is defective.

5.4.2 How to Read the Error Buffer

You can read the error buffer in 3 ways:

- On screen via the SAM/SDM/CSM (if you have a picture). Example:
  - ERROR: 0 0 0 0 0 : No errors detected
  - ERROR: 6 0 0 0 0 : Error code 6 is the last and only detected error
  - ERROR: 9 6 0 0 0 : Error code 6 was detected first and error code 9 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture). See “The Blinking LED Procedure”.
- Via ComPair.

5.4.3 Error Codes

In case of non-intermittent faults, write down the errors present in the error buffer and clear the error buffer before you begin the repair. This ensures that old error codes are no longer present.
If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error and not the actual cause of the problem (for example, a fault in the protection detection circuitry can also lead to a protection).

Table 5-4 Error code overview

Error code[1)]	Description	Item nr.	Remarks
0	No error.		
1	DC Protection of speakers.		
2	+12V protection error.		12V missing or "low".
3	Reserved.		
4	General I2C error.		note 2
5	Trident Video Processor communication error.	7202	When Trident IC is defective, error 10 and 14 might also be reported. Trident communicates via parallel bus, not via the I2C bus. The I2C bus of Trident is only used in ComPair mode.
6	I2C error while communicating with the NVM.	7315	The TV will not start-up due to critical dta not available from the NVM, but the LED will blink the error code.
7	I2C error while communicating with the Tuner.	1101	
8	I2C error while communicating with the IF Demodulator.	7113	
9	I2C error communicating with the Sound Processor.	7411	
10	SDRAM defective.	7204	
11	I2C error while communicating with the HDMI IC.	7817	
12	I2C error while communicating with the MOJO PNX8314.	7G00	if applicable
13	DVB HW communication error.	7F01, 7K00, 7G00	if applicable
14	SDRAM defective.	7205	
15	Reserved.		
16	Reserved.		
17	Reserved.		
18	I2C error while communicating with the iBoard processor.		if applicable
19	I2C error while communication with 1080p bolt-on module.		if applicable

Notes
1. Some of the error codes reported are depending on the option code configurations.
2. This error means: no I2C device is responding to the particular I2C bus. Possible causes: SCL/SDA shorted to GND, SCL shorted to SDA, or SCL/SDA open (at uP pin). The internal bus of the Trident platform should not cause the entire system to halt as such an error can be reported.

5.4.4 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:
- By using the CLEAR command in the SAM menu:
  – To enter SAM, press the following key sequence on the remote control transmitter: “**062596**” directly followed by the OSD/i+ button (do not allow the display to time out between entries while keying the sequence).
  – Make sure the menu item CLEAR is selected. Use the MENU UP/DOWN buttons, if necessary.
  – Press the MENU RIGHT button to clear the error buffer. The text on the right side of the “CLEAR” line will change from “CLEAR?” to “CLEARED”
- If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

Note: If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

5.5 The Blinking LED Procedure

5.5.1 Introduction

The software is capable of identifying different kinds of errors. Because it is possible that more than one error can occur over time, an error buffer is available, which is capable of storing the last five errors that occurred. This is useful if the OSD is not working properly.

Errors can also be displayed by the blinking LED procedure. The method is to repeatedly let the front LED pulse with as many pulses as the error code number, followed by a period of 1.5 seconds in which the LED is “off”. Then this sequence is repeated.

Example (1): error code 4 will result in four times the sequence LED “on” for 0.25 seconds / LED “off” for 0.25 seconds. After this sequence, the LED will be “off” for 1.5 seconds. Any RC5 command terminates the sequence. Error code LED blinking is in red colour.

Example (2): the content of the error buffer is “**12 9 6 0 0**”
After entering SDM, the following occurs:
- 1 long blink of 5 seconds to start the sequence,
- 12 short blinks followed by a pause of 1.5 seconds,
- 9 short blinks followed by a pause of 1.5 seconds,
- 6 short blinks followed by a pause of 1.5 seconds,
- 1 long blink of 1.5 seconds to finish the sequence,
- The sequence starts again with 12 short blinks.

5.5.2 Displaying the Entire Error Buffer

Additionally, the entire error buffer is displayed when Service Mode “SDM” is entered. In case the TV set is in protection or Stand-by: The blinking LED procedure sequence (as in SDM-mode in normal operation) must be triggered by the following RC sequence: “**MUTE**” “**062500**” “**OK**”.
In order to avoid confusion with RC5 signal reception blinking, this blinking procedure is terminated when a RC5 command is received.

To erase the error buffer, the RC command “**MUTE**” “**062599** “**OK**” can be used.

5.6 TV Main Software Upgrade

For instructions on how to upgrade the TV Main software, refer to ComPair.

5.7 Fault Finding and Repair Tips

Notes:
- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.7.1 NVM Editor

In some cases, it can be convenient if one directly can change the NVM contents. This can be done with the “NVM Editor” in SAM mode. With this option, single bytes can be changed.

Caution:
- **Do not change the NVM settings without understanding the function of each setting, because incorrect NVM settings may seriously hamper the correct functioning of the TV set!**
- Always write down the existing NVM settings, before changing the settings. This will enable you to return to the original settings, if the new settings turn out to be incorrect.

Table 5-5 NVM editor overview

	Hex	Dec	Description
.ADR	0x000A	10	Existing value
.VAL	0x0000	0	New value
.Store	Store?		

5.7.2 Load Default NVM Values

It is possible to download default values automatically into the NVM in case a blank NVM is placed or when the NVM first 20 address contents are "FF". After the default values are downloaded, it is possible to start-up and to start aligning the TV set. To initiate a forced default download the following action has to be performed:
1. Switch “off” the TV set with the mains cord disconnected from the wall outlet (it does not matter if this is from "Standby" or "Off" situation).
2. Short-circuit the SDM jumpers on the SSB (keep short circuited).
3. Press “P+” or “CH+” on the local keyboard (and keep it pressed).
4. Reconnect the mains supply to the wall outlet.
5. Release the “P+” or “CH+” when the set is “on” or blue LED is blinking.

When the downloading has completed successfully, the set should be into Standby, i.e. red LED on.

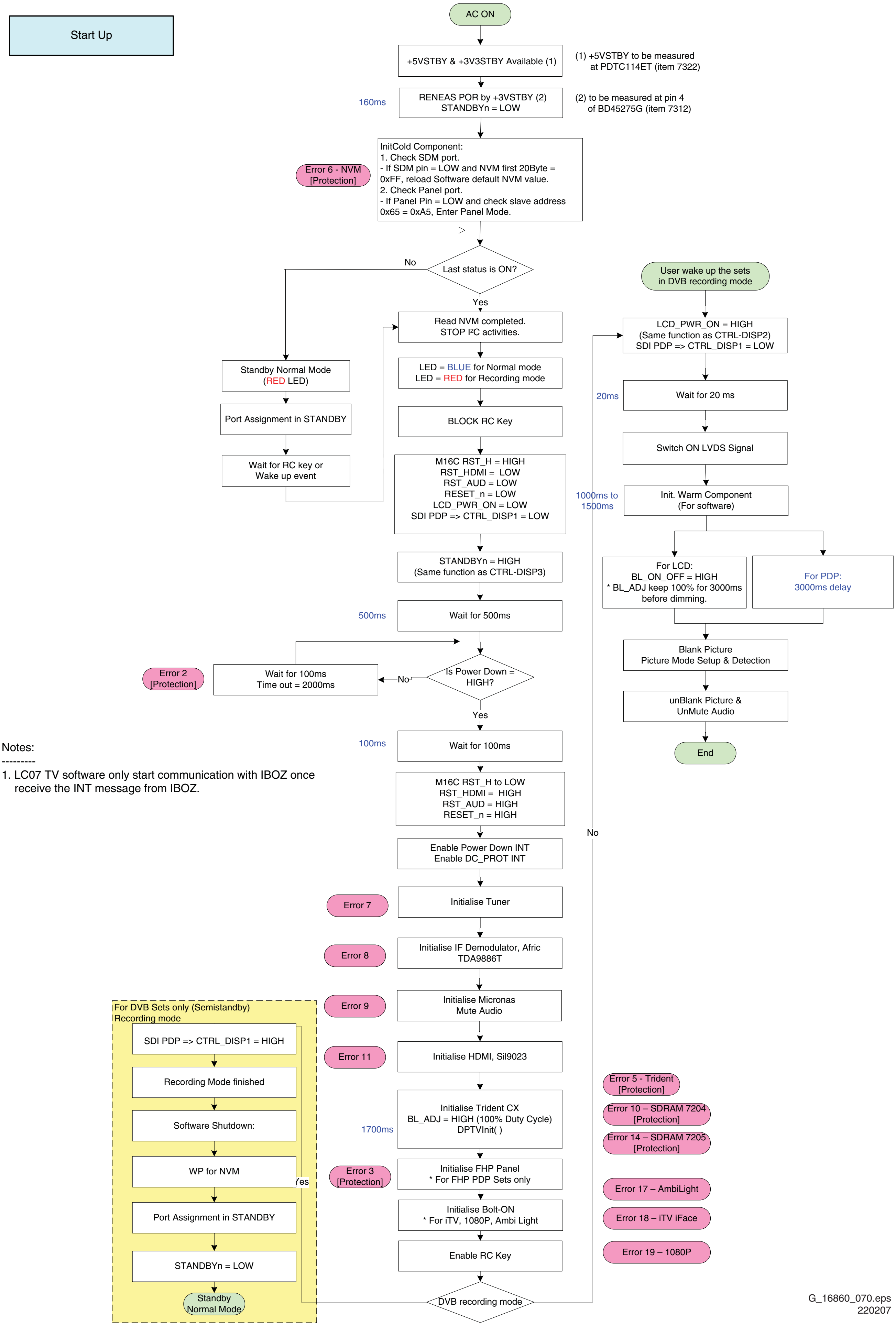
Alternative method (1):
1. Go to SAM.
2. Select NVM Editor.
3. Select ADR (address) to 1 (dec).
4. Change the VAL (value) to 170 (dec).
5. Store the value.
6. Do a hard reset to make sure new default values took place.

Alternative method (2):
It is also possible to upload the default values to the NVM with ComPair in case the SW is changed, the NVM is replaced with a new (empty) one, or when the NVM content is corrupted.
After replacing an EEPROM (or with a defective/no EEPROM), default settings should be used to enable the set to start-up and allow the Service Default Mode and Service Alignment Mode to be accessed.

5.7.3 Start-up/Shut-down Flowcharts

Important note for DVB sets:
- When you put a DVB set into Stand-by mode **with an RC**, the set will go to “Semi Stand-by” mode for 5 minutes. This, to facilitate “Off the Air download” (OAD). If there is no activity within these 5 minutes, the set will switch to Stand-by mode. In “Semi Stand-by” mode, the LCD backlight and Audio Amplifier are turned “off” but other circuits still work as normal. The customer might think the set is in Stand-by. However, in real Stand-by mode, only the uP and the NVM are alive and all other circuits are switched “off”.
- If you press **the mains switch** at the local key board in a DVB set, the set will switch to Stand-by mode.

On the next pages you will find start-up and shut-down flowcharts, which might be helpful during fault finding.
It should be noted, that some events are only related to PDP sets, and therefore not applicable to this LCD chassis.



Notes:
----
1. LC07 TV software only start communication with IBOZ once receive the INT message from IBOZ.

Figure 5-7 Start-up flowchart

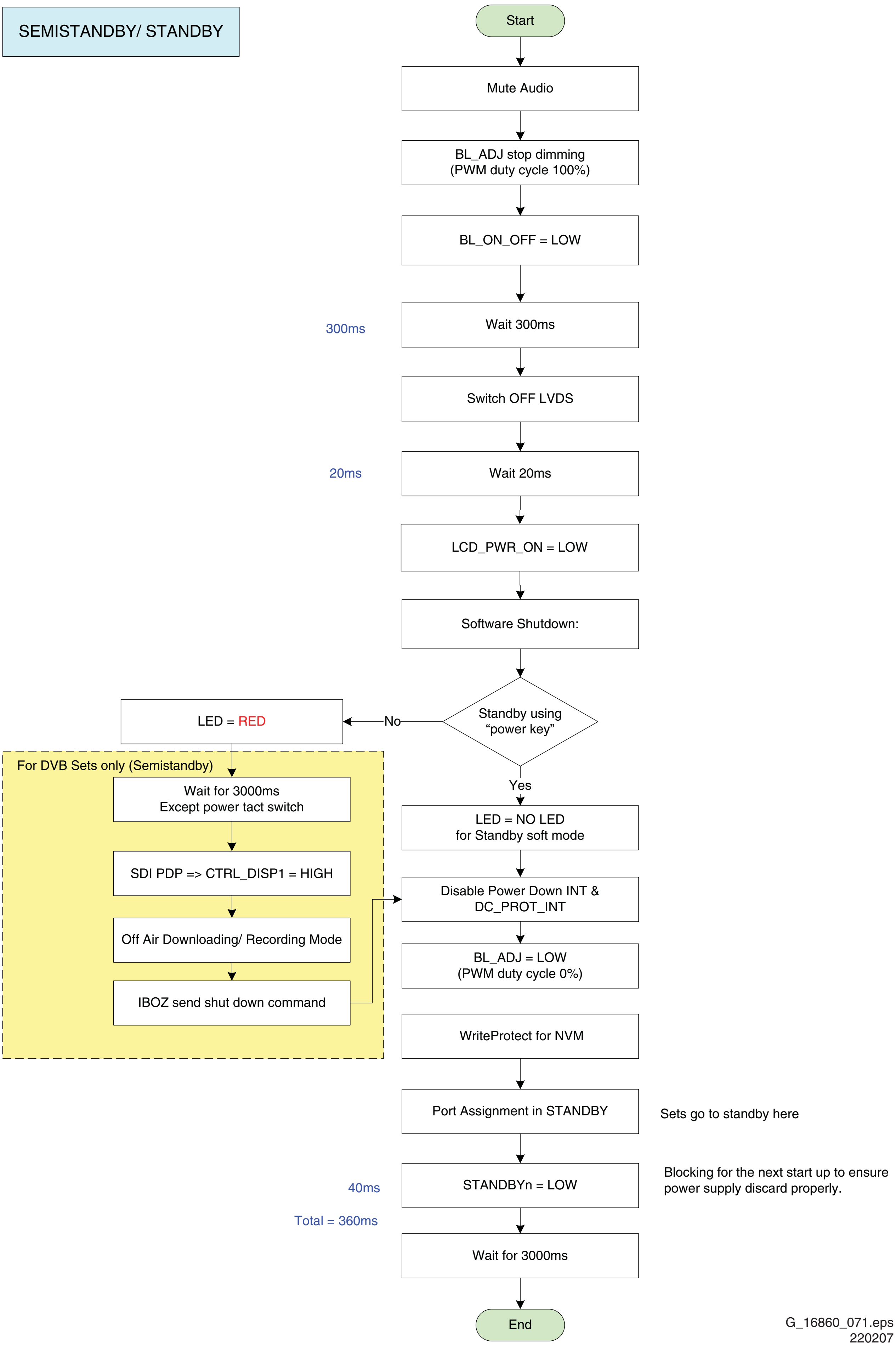
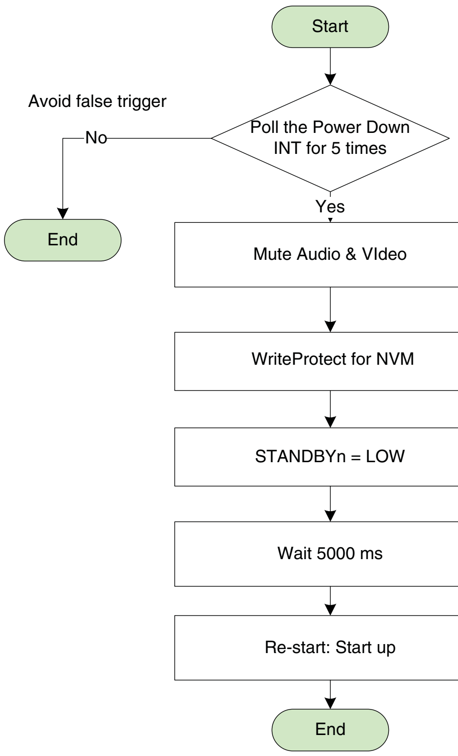


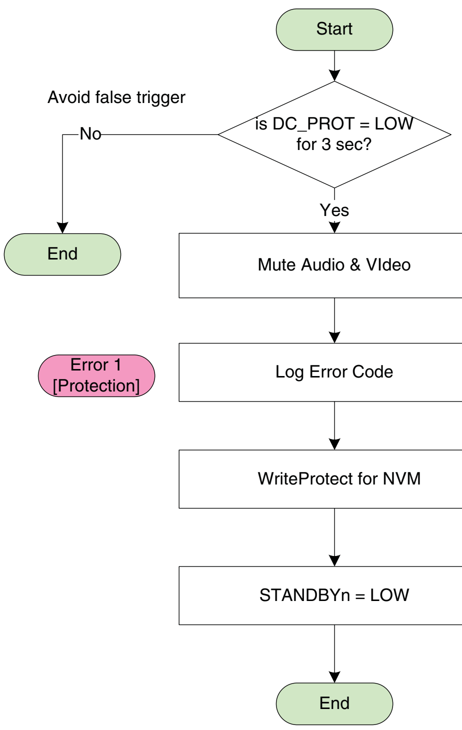
Figure 5-8 Semi Stand-by/Stand-by flowchart

Power Down INT:
AC OFF or Transient INT



Notes:
1. Power Down INT will be based on fall edge triggering
2. +3V3STBY will stay for 15ms, software must perform WriteProtect for NVM within 15ms.

DC_PROT INT



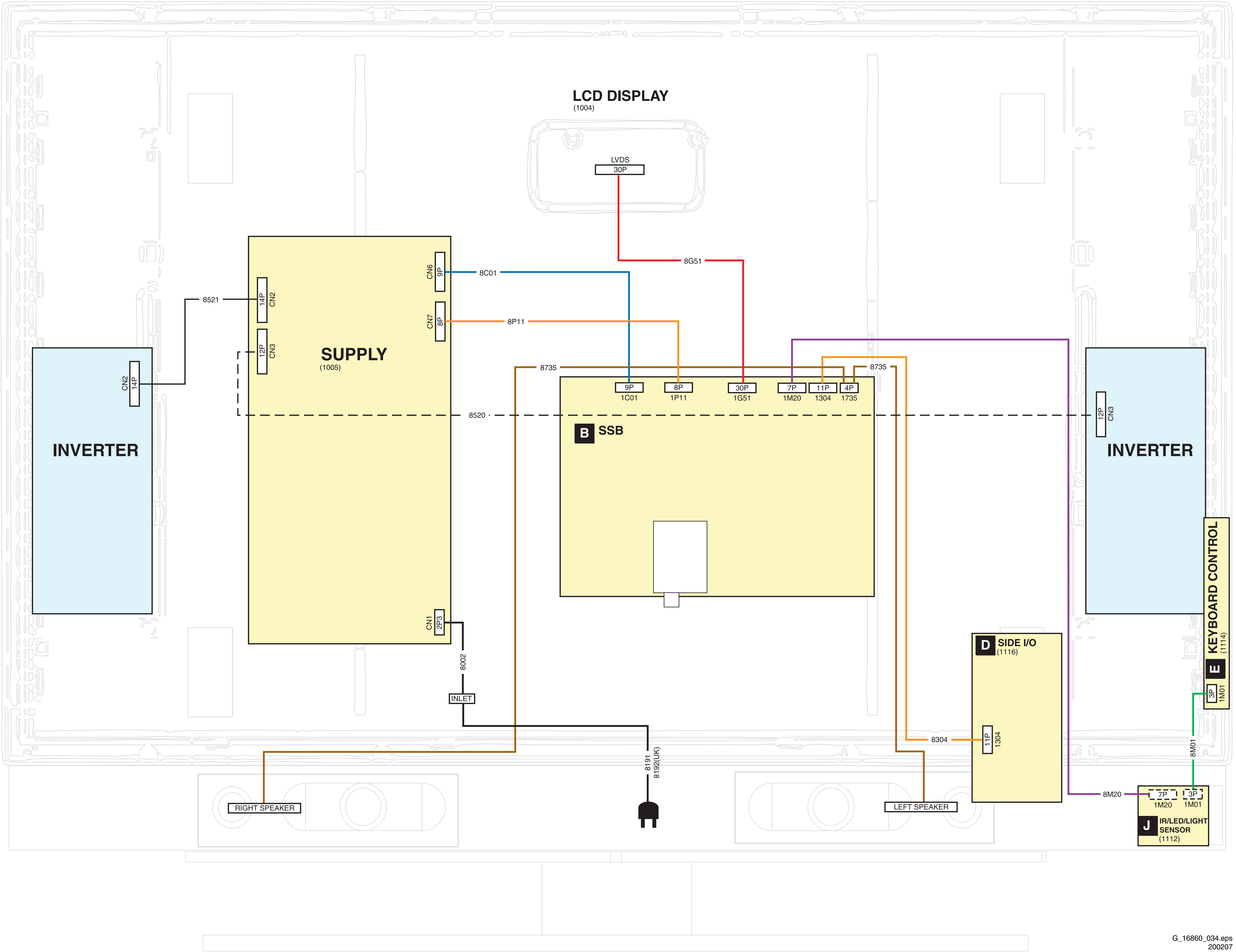
G_16860_072.eps
220207

Figure 5-9 Power Down & DC_PROT flowchart

6. Block Diagrams, Test Point Overview, and Waveforms

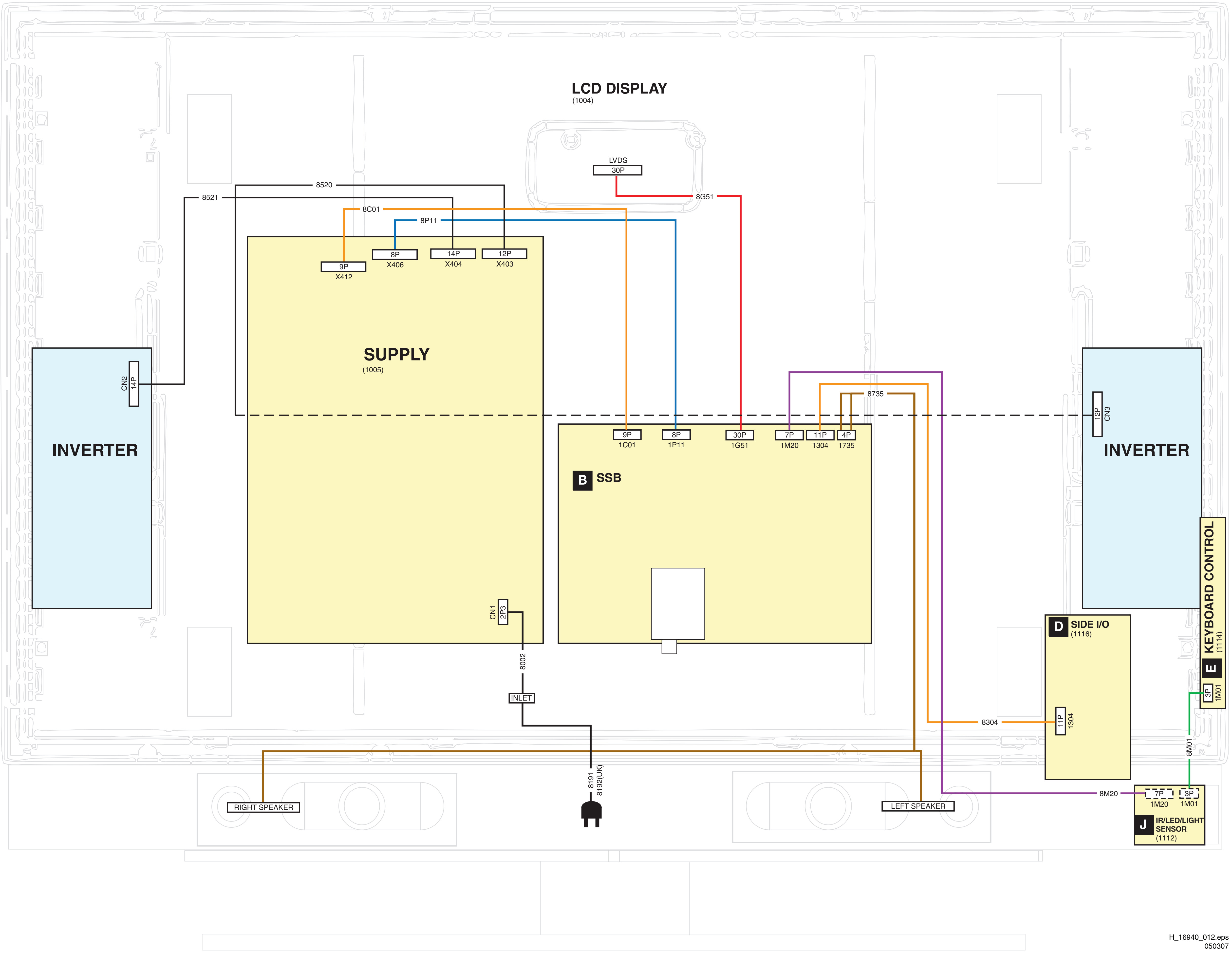
Wiring Diagram 32"

WIRING 32" LCD (STYLING ME7)



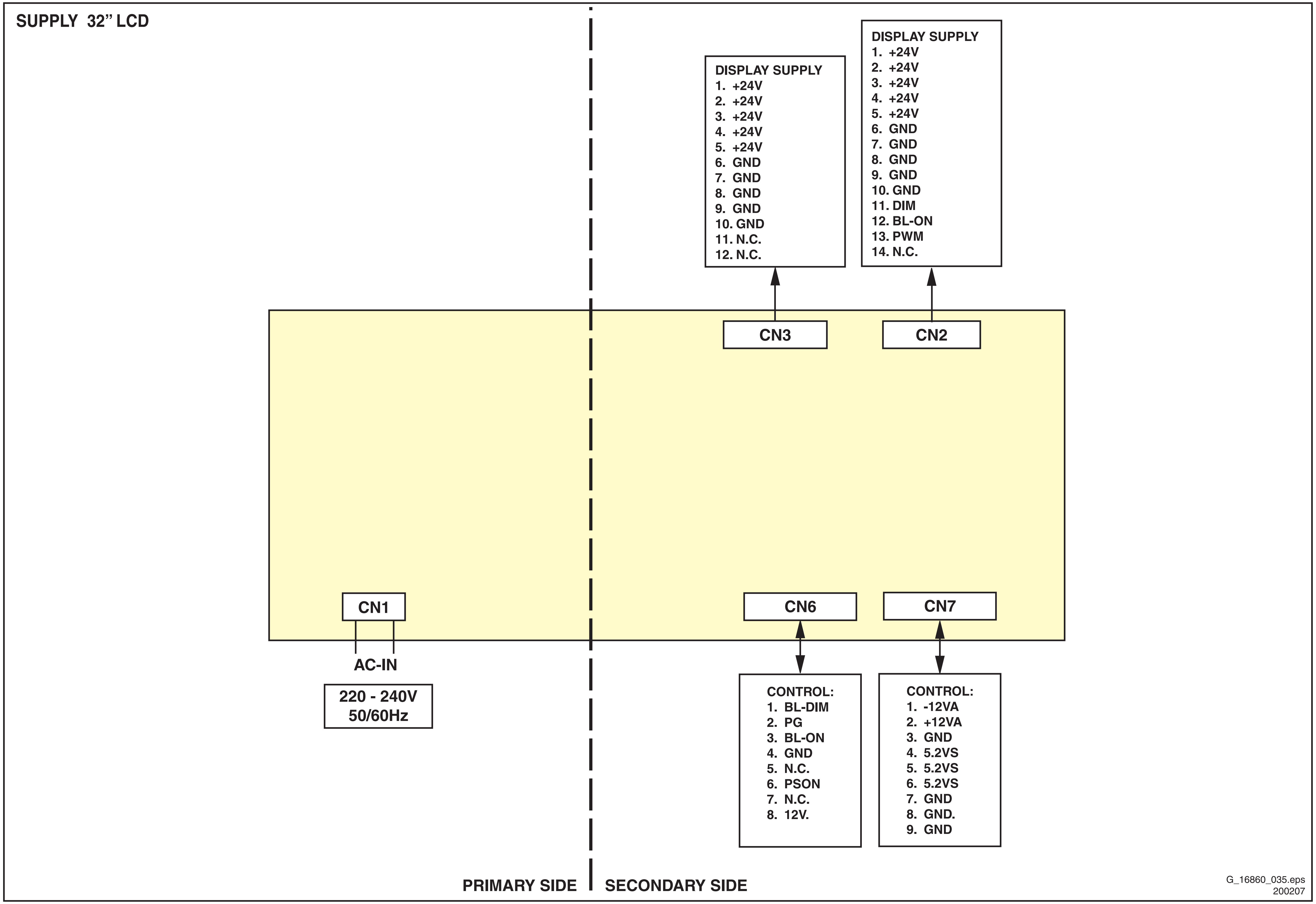
Wiring Diagram 37”-42”

WIRING 37”- 42” LCD (STYLING ME7)

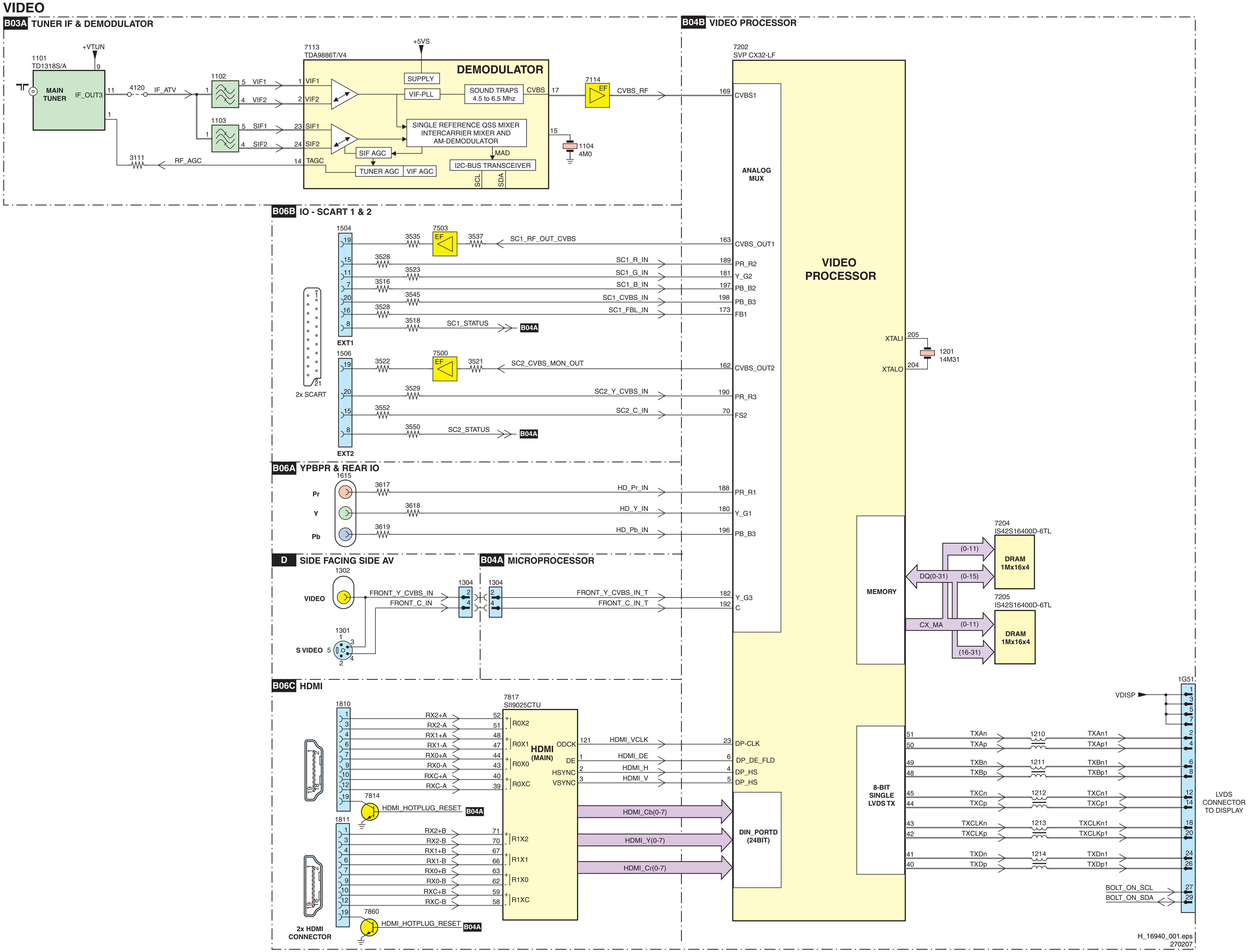


H_16940_012.eps
050307

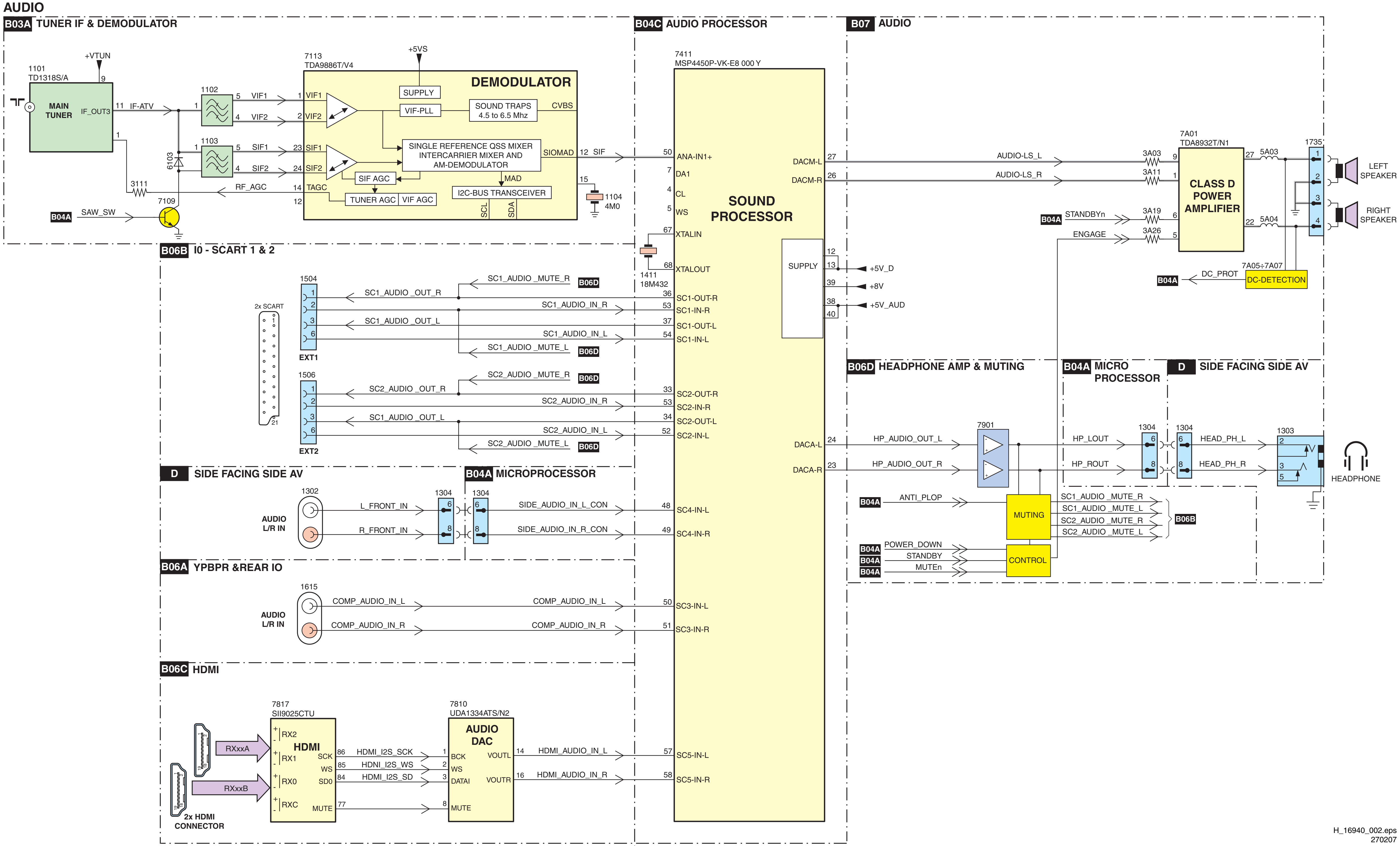
Block Diagram Supply



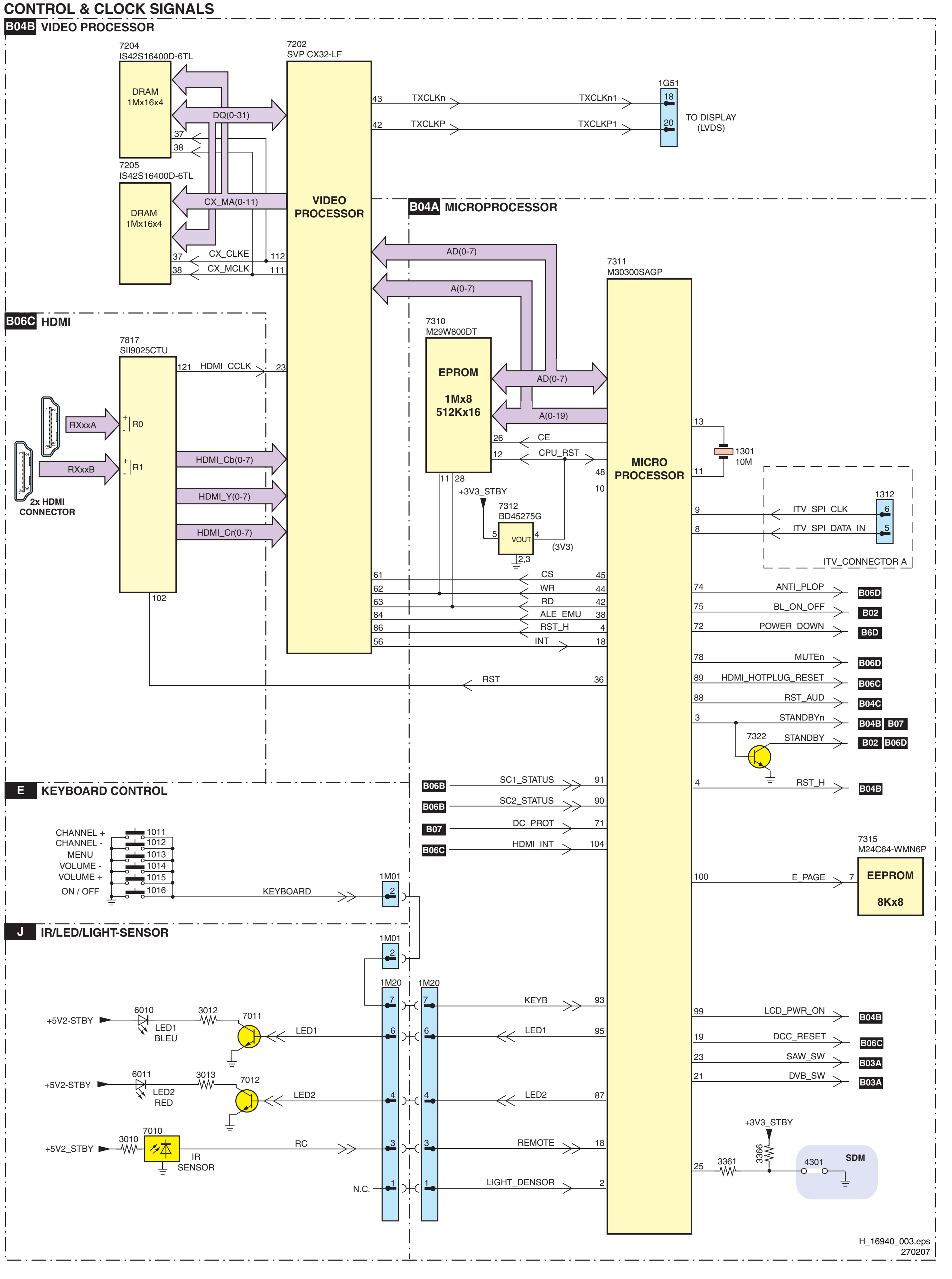
Block Diagram Video



Block Diagram Audio

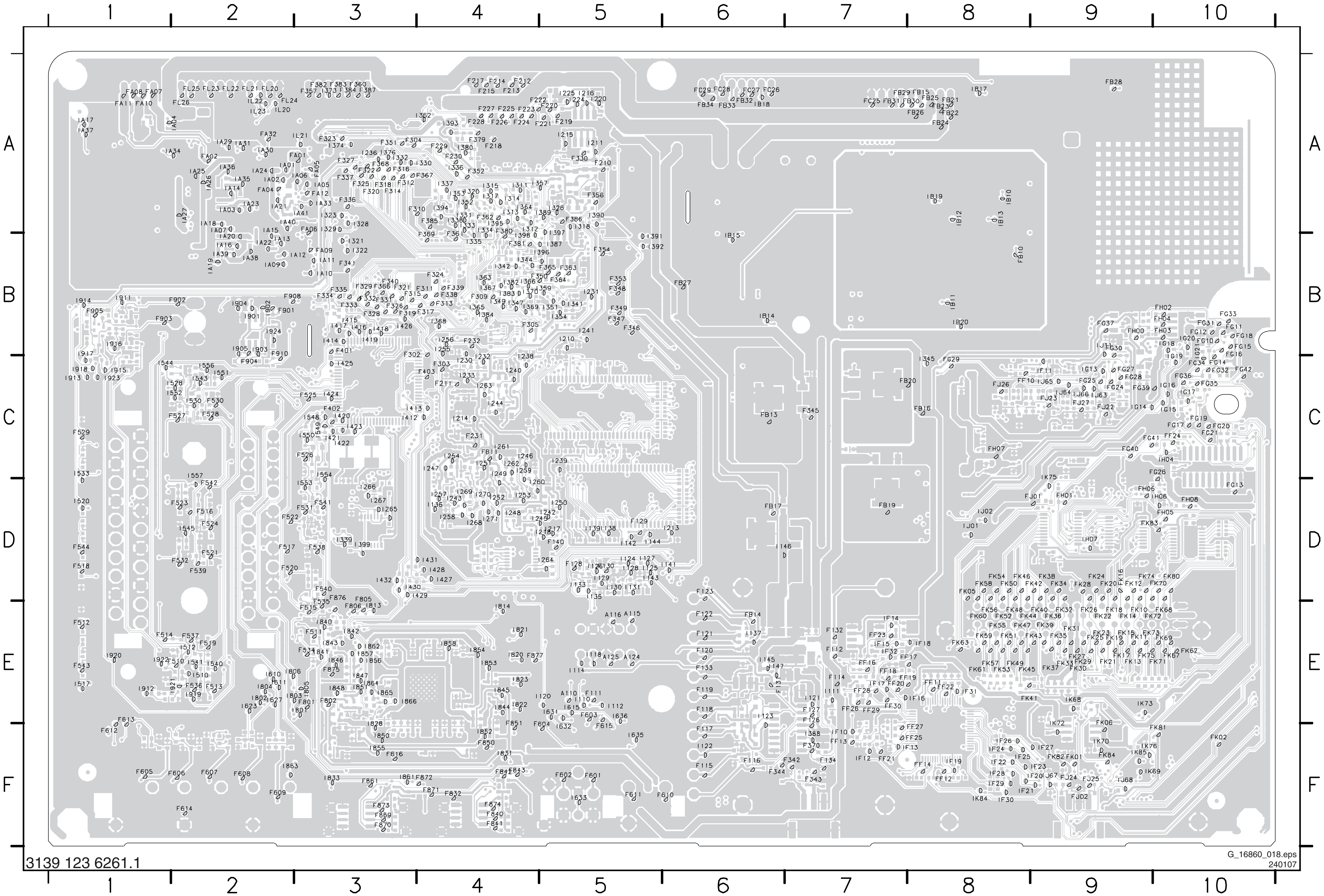


Block Diagram Control & Clock Signals



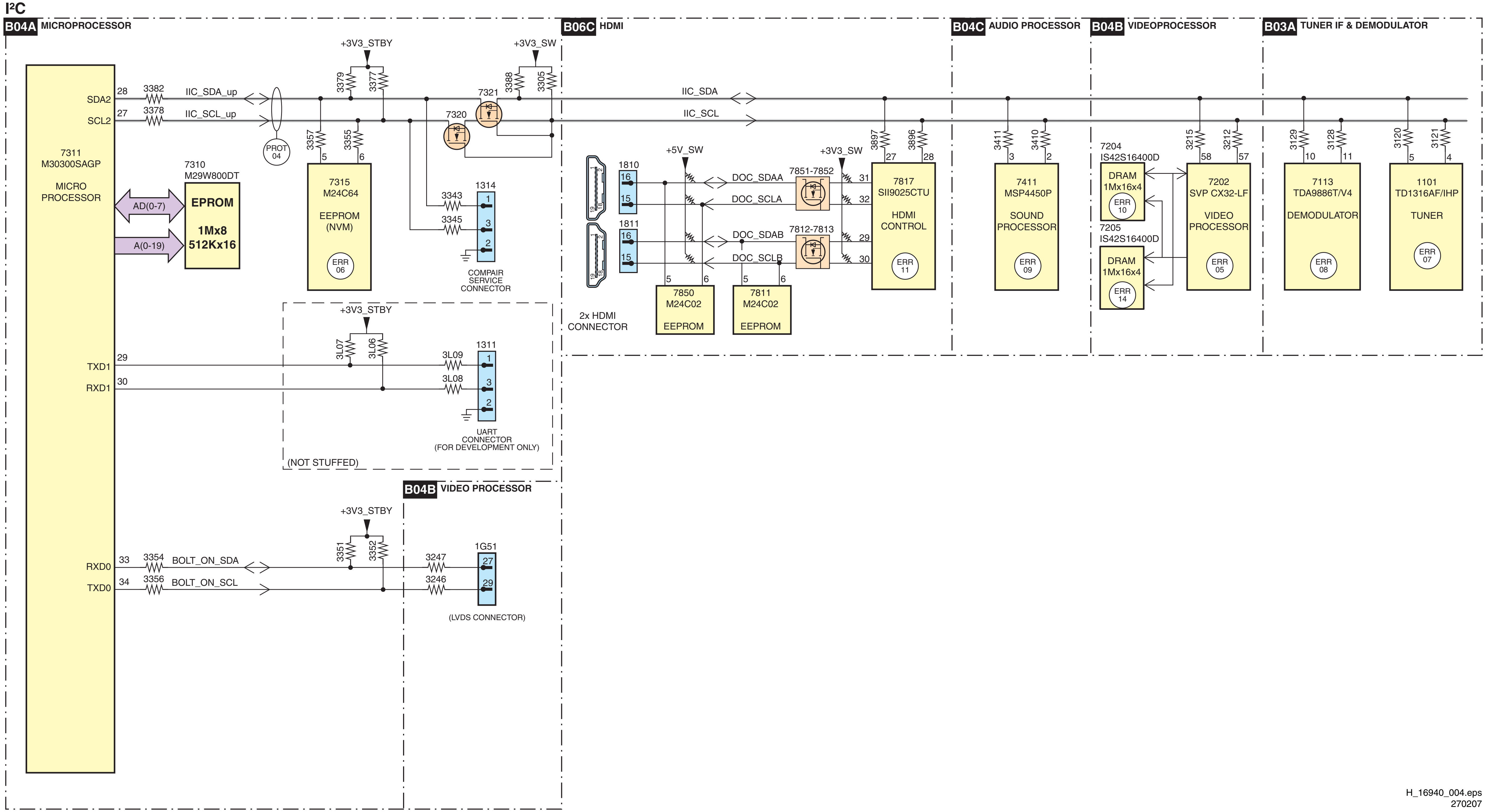
Test Point Overview SSB (Bottom Side)

A110	E5
A115	E5
A116	E5
A124	E5
A125	E5
F111	E5
F112	E7
F114	E7
F115	F6
F116	F6
F117	F6
F118	E6
F119	E6
F120	E6
F121	E6
F122	E6
F123	D6
F126	E7
F127	E7
F128	D5
F129	D5
F130	D5
F131	E6
F132	E7
F133	E6
F134	F7
F140	D5
F210	A5
F211	C4
F212	A4
F213	A4
F214	A4
F215	A4
F217	A4
F218	A4
F219	A5
F220	A5
F221	A5
F222	A4
F223	A4
F224	A4
F225	A4
F226	A4
F227	A4
F228	A4
F229	A4
F230	A4
F231	C4
F232	B4
F302	B3
F303	C4
F304	A3
F305	B4
F309	B4
F310	A4
F311	B4
F312	A3
F313	B4
F314	A3
F315	B3
F316	A3
F317	B4
F318	A3
F319	B3
F320	A3
F321	B3
F322	A3
F323	A3
F324	B4
F325	A3
F326	B3
F327	A3
F328	B3
F329	B3
F330	A5
F331	B3
F332	B3
F333	B3
F334	B3
F335	B3
F336	A3
F337	A3
F338	B4
F339	B4
F340	B3
F341	B3
F342	F7
F343	F7
F344	F6
F345	C7
F346	B5
F347	B5
F348	B5
F349	B5
F350	B5
F351	A3
F352	A4
F353	B5
F354	B5
F356	A5
F357	A3
F360	A3
F361	B4
F362	A4
F363	B5
F364	B5
F365	B5
F366	B3
F367	A4
F368	A3
F369	B4
F370	F7
F379	A4
F380	A4
F381	B4
F382	A3
F383	A3
F384	A3
F385	A4
F386	A5
F387	A3
F401	B3
F402	C3
F403	C4
F510	E2
F511	E3
F512	E1
F513	E2
F514	E1
F515	E3
F516	D2
F517	D2
F518	D1
F519	E2
F520	D2
F521	D2
F522	D2
F523	D2
F524	D2
F525	C3
F526	C3
F527	C2
F528	C2
F529	C1
F530	C2
F531	D3
F532	D2
F534	E3
F535	E3
F536	E2
F537	E2
F538	D3
F539	D2
F540	D3
F541	D3
F542	D2
F543	E1
F544	D1
F601	F5
F602	F5
F603	E5
F604	F5
F605	F1
F606	F2
F607	F2
F608	F2
F609	F2
F610	F6
F611	F5
F612	F1
F613	E1
F614	F2
F615	F5
F616	F3
F801	E3
F802	E3
F805	D3
F806	E3
F832	F4
F840	F4
F841	F4
F842	F4
F843	F4
F850	F4
F851	E4
F861	F3
F869	F3
F870	F3
F871	F4
F872	F4
F873	F3
F874	F4
F875	E3
F876	D3
F877	E4
F901	B2
F902	B2
F903	B1
F904	C2
F905	B1
F908	B2
F910	B2
FA01	A3
FA02	A2
FA04	A2
FA05	A3
FA06	A3
FA07	A1
FA08	A1
FA09	B3
FA10	A1
FA11	A1
FA12	A3
FA32	A2
FB10	B8
FB11	C4
FB13	C6
FB14	E6
FB15	A8
FB16	C8
FB17	D6
FB19	D7
FB20	C8
FB21	A8
FB22	A8
FB23	A8
FB24	A8
FB25	A8
FB26	A8
FB27	B6
FB28	A9
FB29	A7
FB30	A8
FB31	A7
FB32	A6
FB33	A6
FB34	A6
FC25	A7
FC26	A6
FC27	A6
FC28	A6
FC29	A6
FF10	C8
FF11	E8
FF12	F8
FF13	F7
FF14	F8
FF16	E7
FF17	E8
FF18	E7
FF19	E8
FF20	E7
FF21	F7
FF22	E8
FF23	E7
FF24	C10
FF25	F8
FF26	E7
FF27	F8
FF28	E7
FF29	E7
FF30	E7
FG10	B10
FG11	B10
FG12	B10
FG13	D10
FG14	C10
FG15	B10
FG16	B10
FG17	C10
FG18	B10
FG19	C10
FG20	C10
FG21	C10
FG24	C9
FG25	C9
FG26	C10
FG27	C9
FG28	C9
FG29	C8
FG30	B9
FG31	B10
FG32	C10
FG33	B10
FG34	C10
FG35	C10
FG36	C10
FG37	B9
FG39	C9
FG40	C9
FG41	C9
FG42	C10
FH00	B9
FH01	D9
FH02	B10
FH03	B10
FH04	B10
FH05	D10
FH06	D9
FH07	C8
FH08	D10
FJ01	D9
FJ02	F9
FJ22	C9
FJ23	C9
FJ24	F9
FJ25	F9
FJ26	C8
FJ27	C9
FK01	F9
FK02	F10
FK05	D8
FK06	E9
FK10	E9
FK11	E9
FK12	D9
FK13	E9
FK14	E9
FK15	E9
FK16	D9
FK17	E9
FK18	E9
FK19	E9
FK20	D9
FK21	E9
FK22	E9
FK23	E9
FK24	D9
FK25	E9
FK26	E9
FK27	E9
FK28	D9
FK29	E9
FK30	E9
FK31	E9
FK32	E9
FK33	E9
FK34	D9
FK35	E9
FK36	E9
FK37	E9
FK38	D9
FK39	E9
FK40	E9
FK41	E8
FK42	D9
FK43	E9
FK44	E8
FK45	E8
FK46	D8
FK47	E8
FK48	E8
FK49	E8
FK50	D8
FK51	E8
FK52	E8
FK53	E8
FK54	D8
FK55	E8
FK56	E8
FK57	E8
FK58	D8
FK59	E8
FK60	E8
FK61	E8
FK62	E10
FK63	E8
FK67	E10
FK68	E10
FK69	E10
FK70	D10
FK71	E10
FK72	E10
FK73	E9
FK74	D9
FK75	E9
FK80	D10
FK81	F10
FK82	F9
FK83	D9
FK84	F9
FL20	A2
FL21	A2
FL22	A2
FL23	A2
FL24	A2
FL25	A2
FL26	A2
I110	E5
I111	E7
I112	E5
I114	E5
I118	E5
I120	E5
I121	E7
I122	F6
I123	E6
I124	D5
I125	D5
I126	D5
I127	D5
I128	D5
I129	D5
I130	D5
I131	D5
I133	D5
I135	D5
I136	D4
I137	E6
I138	D5
I139	D5
I141	D6
I142	D5
I143	D5
I144	D5
I145	E6
I146	D6
I147	E6
I210	B5
I211	A5
I213	D6
I214	C4
I215	A5
I216	A5
I217	D5
I218	D5
I220	A5
I224	A5
I225	A5
I230	C4
I231	B5
I232	C4
I233	C4
I236	A3
I238	C4
I239	C5
I240	C4
I241	B5
I242	D5
I243	D4
I244	C4
I245	D5
I246	C4
I247	C4
I248	D4
I249	C4
I250	D5
I251	C4
I252	D4
I253	D4
I254	C4
I255	B4
I256	B4
I257	D4
I258	D4
I259	C4
I260	D4
I261	C4
I262	C4
I263	C4
I264	D5
I265	D3
I266	D3
I267	D3
I268	D4
I269	D4
I270	D4
I271	D4
I311	A4
I312	A4
I313	A4
I314	A4
I315	A4
I317	A4
I318	A5
I320	A4
I321	B3
I322	B3
I323	A3
I326	A5
I328	A3
I329	A3
I330	A4
I331	A4
I332	A3
I333	A4
I334	A4
I335	B4
I336	A4
I337	A4
I338	A4
I339	D3
I341	B5
I342	B4
I344	B4
I345	C8
I347	B4
I349	B4
I351	B5
I352	A4
I353	A4
I354	B5
I357	A5
I359	B5
I362	A4
I363	B4
I364	A4
I365	B4
I366	B4
I367	B4
I368	B4
I369	B4
I370	B4
I373	A3
I374	A3
I376	A3
I380	A4
I382	B4
I383	B4
I384	B4
I387	B5
I388	F7
I389	A5
I390	A5
I391	B5
I392	B5
I393	A4
I394	A4
I395	A4
I396	B5
I397	A5
I398	B4
I399	D3
I412	C3
I413	C3
I414	B3
I415	B3
I416	B3
I417	B3
I418	B3
I419	B3
I420	C3
I421	C3
I422	C3
I423	C3
I424	C3
I425	C3
I426	B3
I427	D4
I428	D4
I429	D4
I430	D3
I431	D4
I432	D3
I510	E2
I512	E2
I517	E1
I520	D1
I528	C2
I530	C2
I533	C1
I540	E2
I541	E2
I543	C2
I544	C1
I545	D2
I548	C3
I549	C3
I550	C3
I551	C2
I552	C2
I553	D3
I554	C3
I556	C2
I557	C2
I610	E2
I611	E2
I615	E5
I623	E2
I627	E2
I631	E5
I632	F5
I633	F5
I635	F5
I636	E5
I801	E3
I802	E2
I803	E2
I804	E2
I805	E3
I806	E2
I813	E3
I814	E4
I820	E4
I821	E4
I822	E4
I823	E4
I828	F3
I831	F4
I833	F3
I840	E3
I841	E3
I842	E3
I843	E3
I844	E4
I845	E4
I846	E3
I847	E3
I848	E3
I850	F3
I851	E3
I852	F4
I853	E4
I854	E4
I855	F3
I856	E3
I857	E3
I858	E4
I861	F3
I862	E3
I863	F2
I864	E3
I865	E3
I866	E3
I901	B2
I902	B2
I903	B2
I904	B2
I905	B2
I911	B1
I912	E1
I913	C1
I914	B1
I915	C1
I916	B1
I917	B1
I918	C1
I919	E2
I920	E1
I921	E2
I922	E1
I923	C1
I924	B2
IA01	A2
IA02	A2
IA03	A2
IA04	A2
IA05	A3
IA06	A3
IA07	A2
IA09	B2
IA10	B3
IA11	B3
IA12	B3
IA13	B2
IA14	A2
IA15	A2
IA16	B2
IA17	A1
IA18	A2
IA19	B2
IA20	B2
IA21	A2
IA22	B2
IA23	A2
IA24	A2
IA25	A2
IA26	A2
IA27	A2
IA29	A2
IA30	A2
IA31	A2
IA33	A3
IA34	A2
IA35	A2
IA36	A2
IA37	A1
IA38	B2
IA39	B2
IA40	A2
IA41	A3
IB10	A8
IB11	B8
IB12	A8
IB13	A8
IB14	B6
IB15	B6
IB17	A8
IB18	A6
IB19	A8
IB20	B8
IF10	F7
IF11	C9
IF12	F7
IF13	F8
IF14	E7
IF15	E7
IF16	E8
IF17	E7
IF18	E8
IF19	F8
IF20	F9
IF21	F8
IF22	F8
IF23	F9
IF24	F8
IF25	F8
IF26	F8
IF27	F9
IF28	F8
IF29	F8
IF30	F8
IF31	E8
IF32	E7
IG13	C9
IG14	C9
IG15	C10
IG16	C10
IG17	C10
IG18	B10
IG19	C10
IG20	B10
IG21	B10
IH04	C10
IH06	D10
IH07	D9
IJ01	D8
IJ02	D8
IJ11	B9
IJ63	C9
IJ64	C9
IJ65	C9
IJ66	C9
IJ67	F9
IJ68	F9
IK68	E9
IK69	F9
IK70	F9
IK72	E9
IK73	E9
IK75	C9
IK76	F9
IK84	F8
IK85	F9
IL20	A2
IL21	A3
IL22	A2
IL23	A2



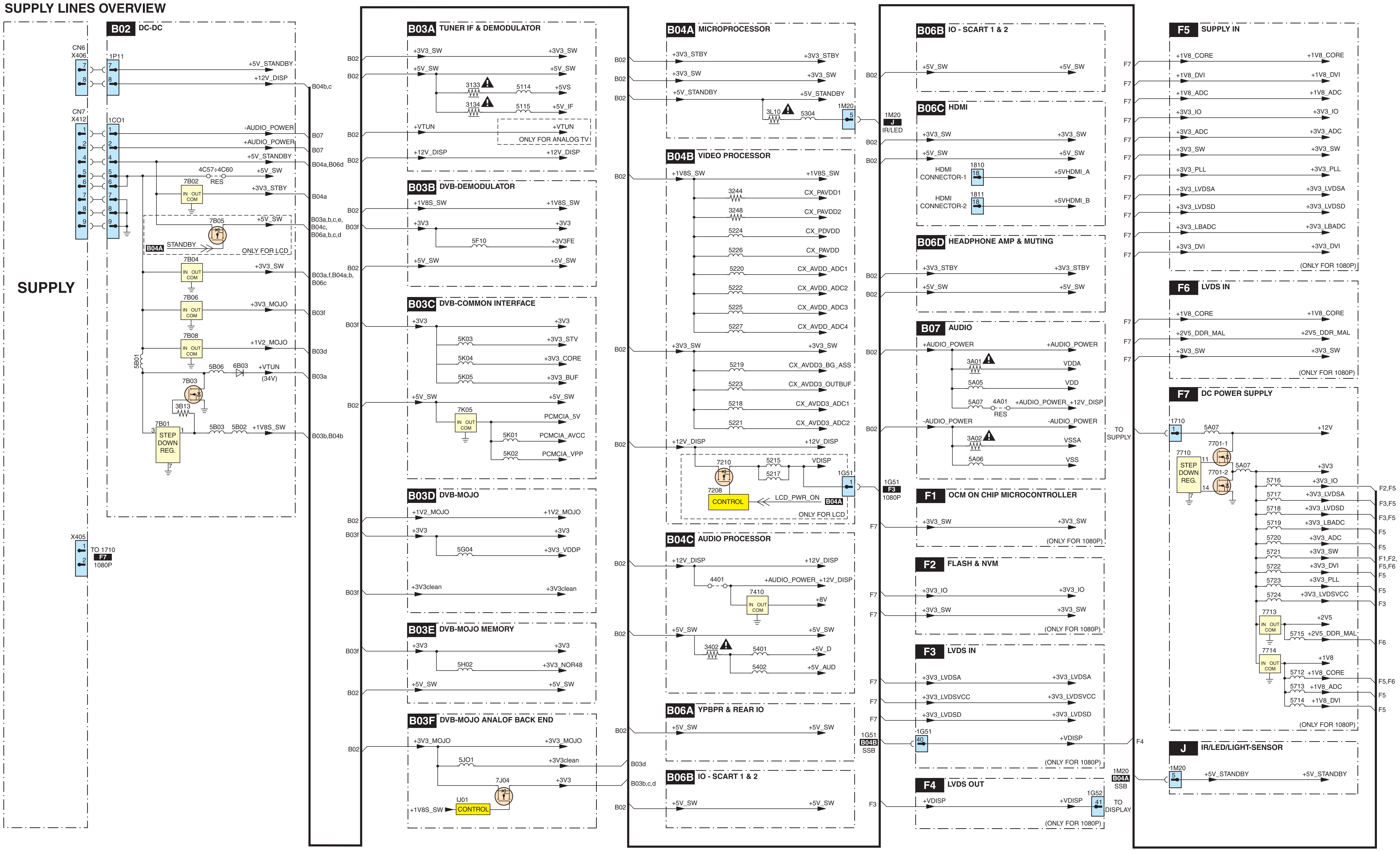
I2C IC's Overview

I^2C



H_16940_004.eps
270207

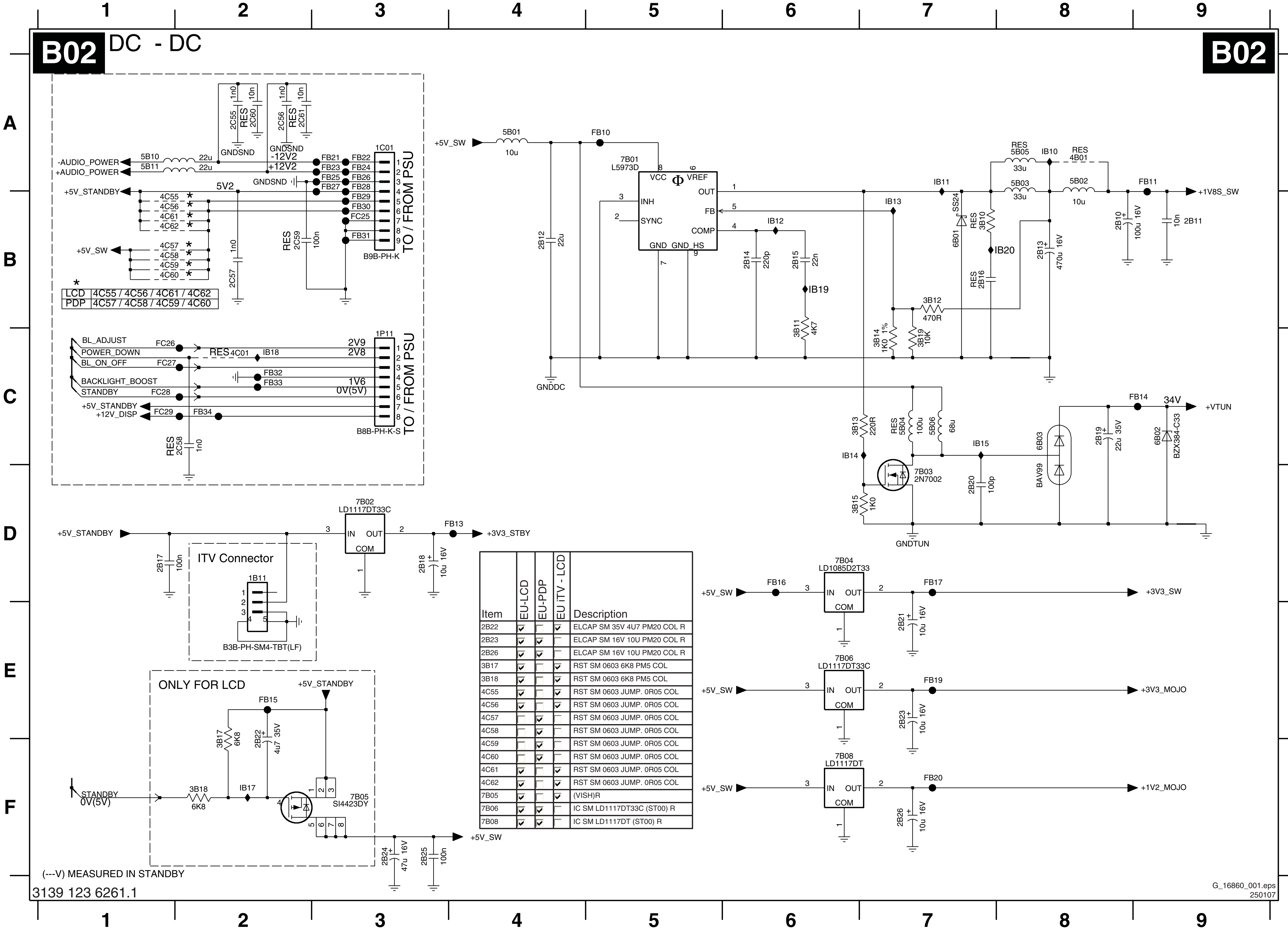
Supply Lines Overview



G_16860_040.eps
090307

7. Circuit Diagrams and PWB Layouts

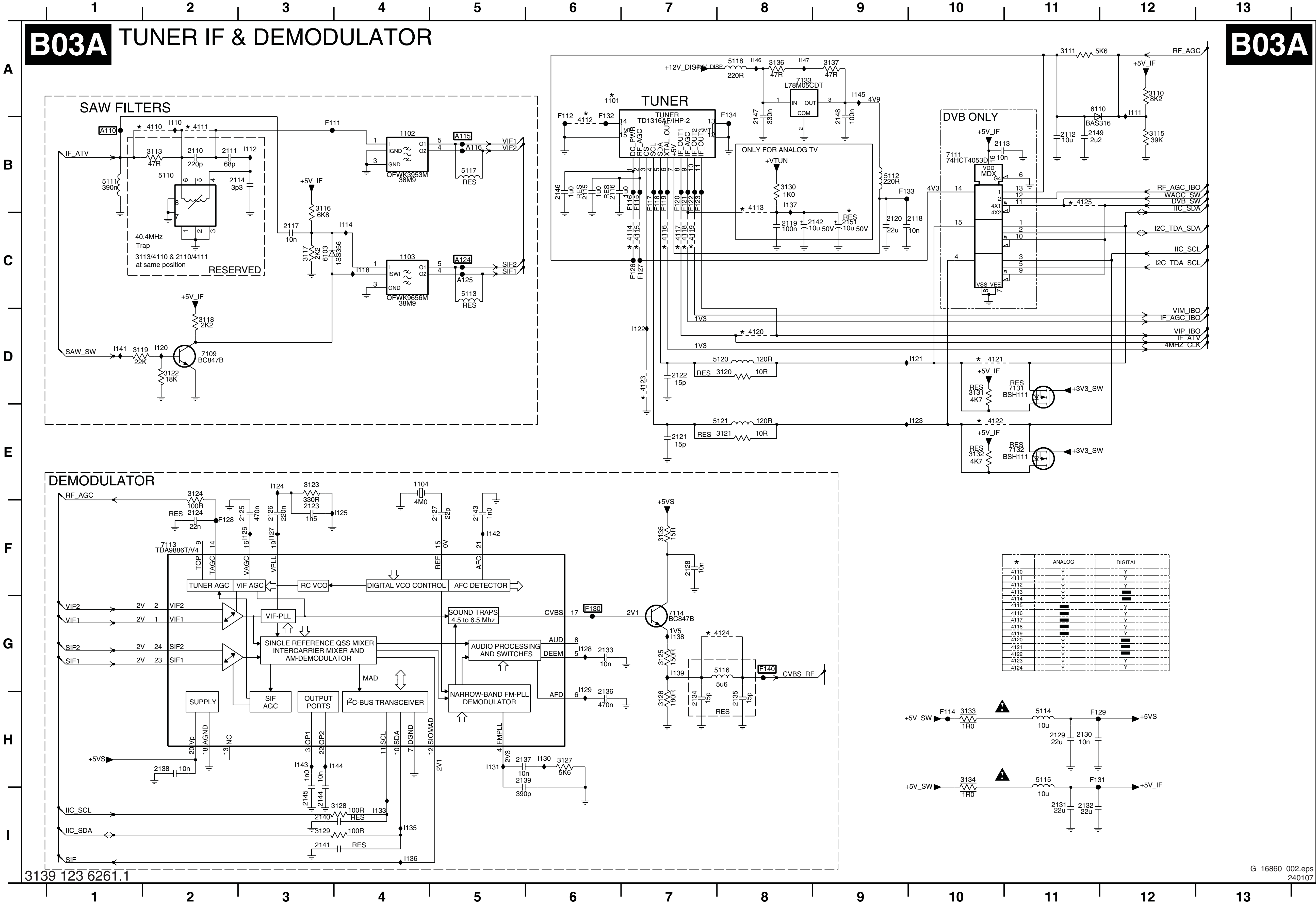
SSB: DC/DC



Item	EU-LCD	EU-PDP	EU iTV - LCD	Description
2B22	✓		✓	ELCAP SM 35V 4U7 PM20 COL R
2B23	✓	✓		ELCAP SM 16V 10U PM20 COL R
2B26	✓	✓		ELCAP SM 16V 10U PM20 COL R
3B17	✓		✓	RST SM 0603 6K8 PM5 COL
3B18	✓		✓	RST SM 0603 6K8 PM5 COL
4C55	✓		✓	RST SM 0603 JUMP. 0R05 COL
4C56	✓		✓	RST SM 0603 JUMP. 0R05 COL
4C57		✓		RST SM 0603 JUMP. 0R05 COL
4C58		✓		RST SM 0603 JUMP. 0R05 COL
4C59		✓		RST SM 0603 JUMP. 0R05 COL
4C60		✓		RST SM 0603 JUMP. 0R05 COL
4C61	✓		✓	RST SM 0603 JUMP. 0R05 COL
4C62	✓		✓	RST SM 0603 JUMP. 0R05 COL
7B05	✓		✓	(VISH)R
7B06	✓	✓		IC SM LD1117DT33C (ST00) R
7B08	✓	✓		IC SM LD1117DT (ST00) R

1B11 D2
1C01 A3
1P11 C3
2B10 B8
2B11 B9
2B12 B4
2B13 B8
2B14 B6
2B15 B6
2B16 B7
2B17 D1
2B18 D3
2B19 C8
2B20 D7
2B21 E7
2B22 F2
2B23 E7
2B24 F3
2B25 F3
2B26 F7
2C55 A2
2C56 A2
2C57 B2
2C58 C2
2C59 B2
2C60 A2
2C61 A2
3B10 B7
3B11 C6
3B12 B7
3B13 C6
3B14 C7
3B15 D6
3B17 F2
3B18 F2
3B19 C7
4B01 A8
4C01 C2
4C55 B1
4C56 B1
4C57 B1
4C58 B1
4C59 B1
4C60 B1
4C61 B1
4C62 B1
5B01 A4
5B02 A8
5B03 A8
5B04 C7
5B05 A8
5B06 C7
5B10 A1
5B11 A1
6B01 B7
6B02 C9
6B03 C8
7B01 A5
7B02 D3
7B03 D7
7B04 D6
7B05 F3
7B06 E6
7B08 F6
FB10 A5
FB11 A9
FB13 D4
FB14 C9
FB15 E2
FB16 D6
FB17 D7
FB19 E7
FB20 F7
FB21 A3
FB22 A3
FB23 A3
FB24 A3
FB25 A3
FB26 A3
FB27 A3
FB28 A3
FB29 B3
FB30 B3
FB31 B3
FB32 C2
FB33 C2
FB34 C2
FC25 B3
FC26 C1
FC27 C1
FC28 C1
FC29 C1
IB10 A8
IB11 A7
IB12 B6
IB13 B7
IB14 C6
IB15 C7
IB17 F2
IB18 C2
IB19 B6
IB20 B8

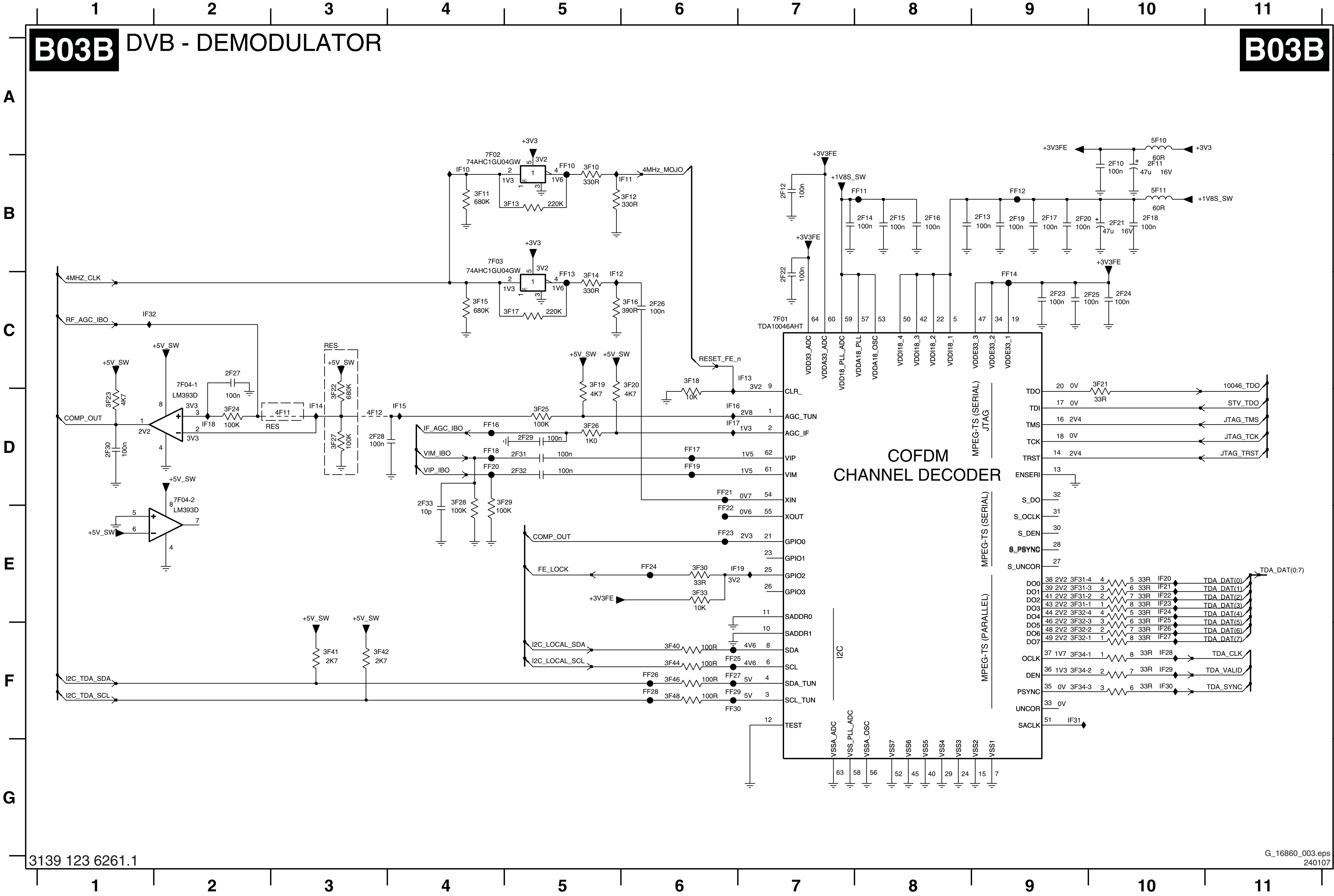
SSB: Tuner & Demodulator



1101 A6
1102 B4
1103 C4
1104 E4
2110 B2
2111 B2
2112 B11
2113 B10
2114 B2
2115 B6
2116 B6
2117 C3
2118 C10
2119 C8
2120 C9
2121 E7
2122 D7
2123 F3
2124 F2
2125 F3
2126 F3
2127 F5
2128 F7
2129 H11
2130 H11
2131 I11
2132 I11
2133 G6
2134 H7
2135 H8
2136 H6
2137 H5
2138 H2
2139 H5
2140 I3
2141 I3
2142 C9
2143 F5
2144 I3
2145 I3
2146 B6
2147 A8
2148 A9
2149 B11
2151 C9
3110 A12
3111 A11
3113 B2
3115 B12
3116 B3
3117 C3
3118 D2
3119 D1
3120 D8
3121 E8
3122 D2
3123 E3
3124 E2
3125 G7
3126 H7
3127 H6
3128 I4
3129 I3
3130 B8
3131 D10
3132 E10
3133 H10
3134 H10
3135 F7
3136 A8
3137 A9
4110 B2
4111 B2
4112 B6
4113 B8
4114 C7
4115 C7
4116 C7
4117 C7
4118 C7
4119 C7
4120 D8
4121 D10
4122 E10
4123 D7
4124 G8
4125 B11
5110 B2
5111 B1
5112 B9
5113 C5
5114 H11
5115 H11
5116 G8
5117 B5
5118 A8
5120 D8
5121 E8
6103 C3
6110 A11
7109 D2
7111 B10
7113 F2
7114 G7
7131 D11
7132 E11
7133 A8

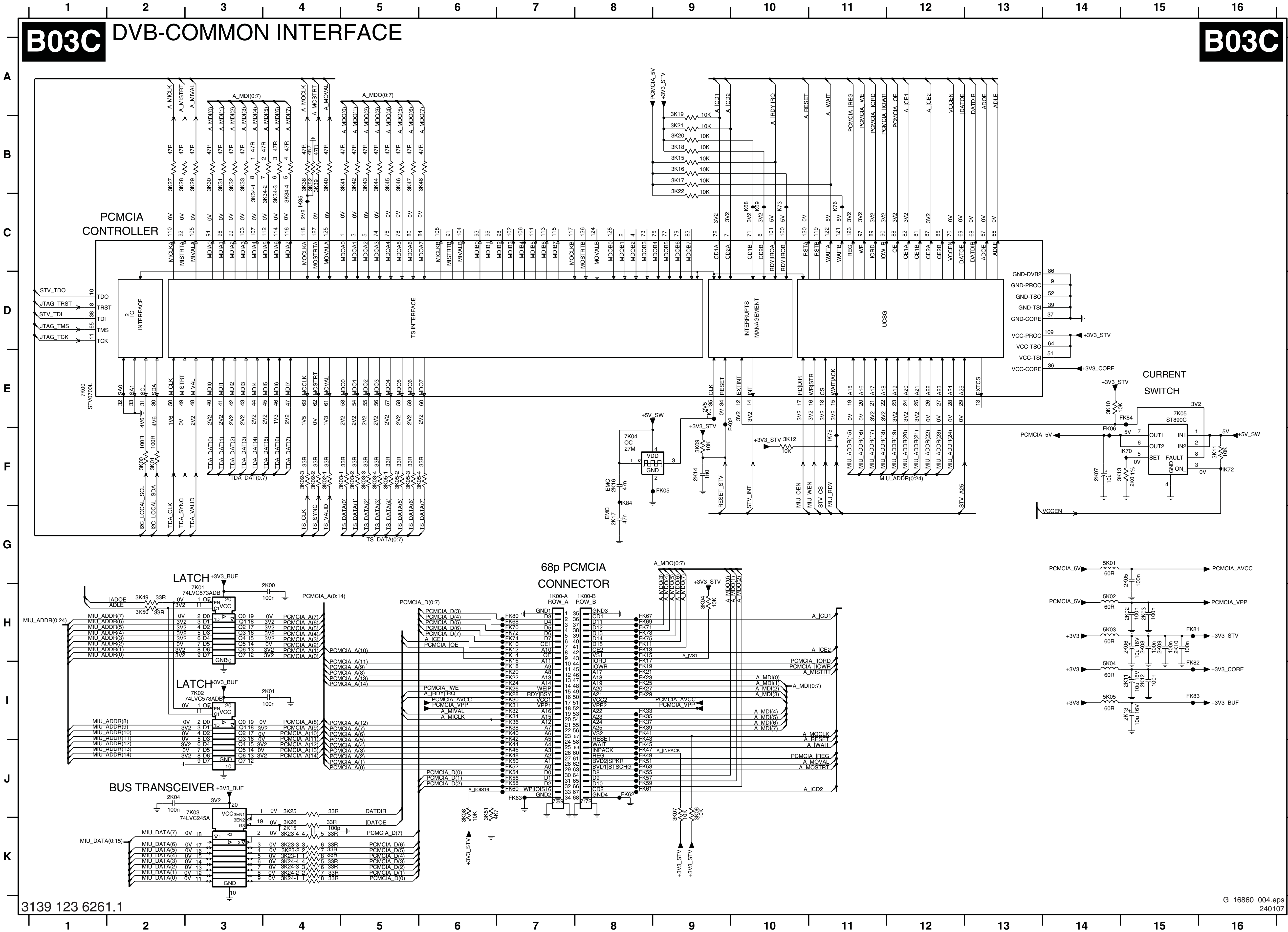
A110 B1
A115 B5
A116 B5
A124 C5
A125 C5
F111 B3
F112 B6
F114 H10
F115 B7
F116 B7
F117 B7
F118 B7
F119 B7
F120 B7
F121 B7
F122 B7
F123 B7
F126 C7
F127 C7
F128 F2
F129 H11
F130 G6
F131 H11
F132 B6
F133 B9
F134 A8
F140 G8
I110 B2
I111 A12
I112 B3
I114 C4
I118 C4
I120 D2
I121 D10
I122 D7
I123 E10
I124 E3
I125 F4
I126 F3
I127 F3
I128 G6
I129 G6
I130 H6
I131 H5
I133 I4
I135 I4
I136 I4
I137 B8
I138 G7
I139 G7
I141 D1
I142 F5
I143 H3
I144 H4
I145 A9
I146 A8
I147 A8

SSB: DVB - Demodulator (Not implemented in this chassis)



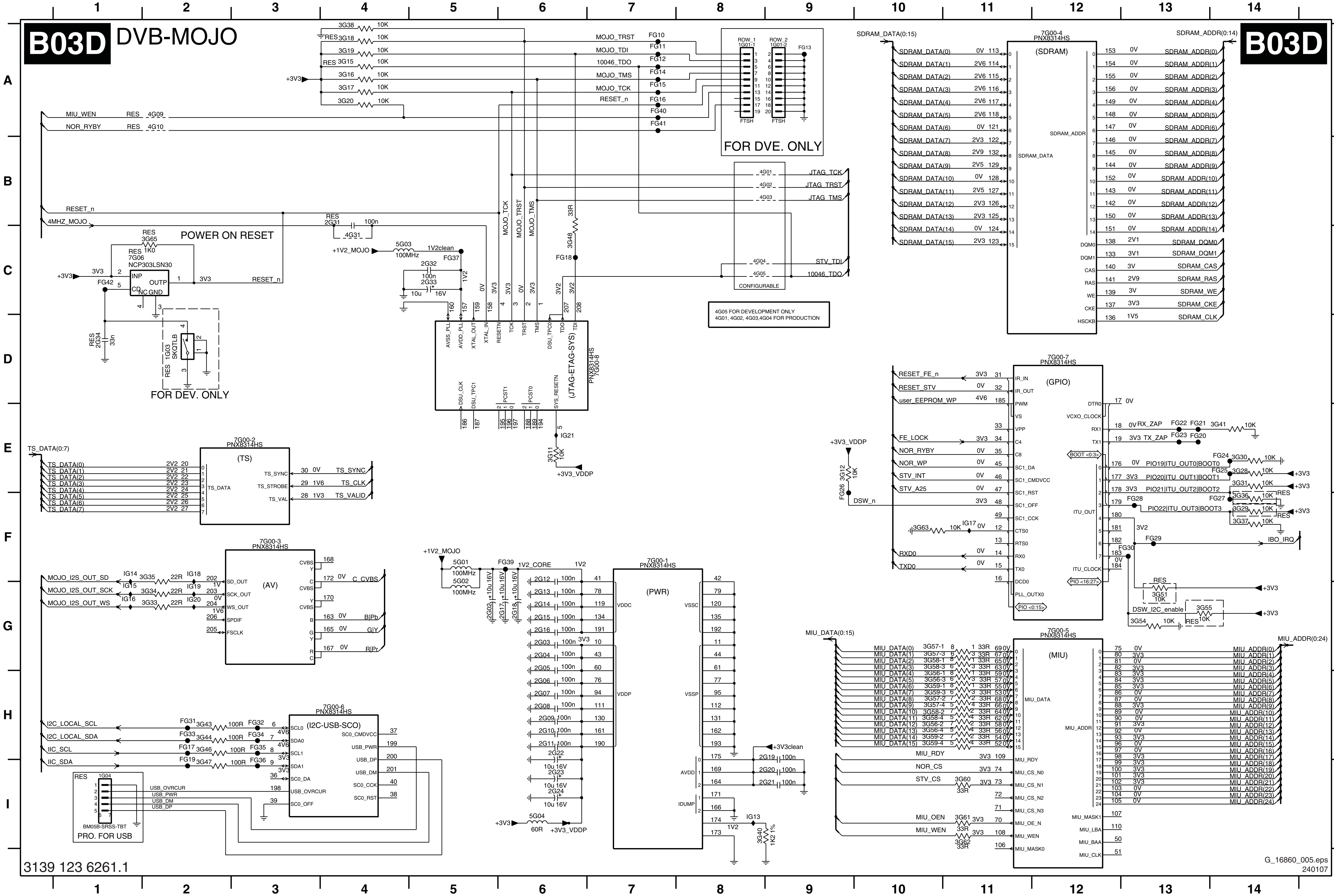
2F10	B10
2F11	B10
2F12	B7
2F13	B9
2F14	B8
2F15	B8
2F16	B8
2F17	B9
2F18	B10
2F19	B9
2F20	B9
2F21	B10
2F22	C7
2F23	C9
2F24	C10
2F25	C10
2F26	C6
2F27	C2
2F28	D3
2F29	D5
2F30	D1
2F31	D5
2F32	D5
2F33	D4
3F10	B5
3F11	B4
3F12	B6
3F13	B5
3F14	C5
3F15	C4
3F16	C6
3F17	C5
3F18	C6
3F19	C5
3F20	C6
3F21	C10
3F22	D3
3F23	D1
3F24	D2
3F25	D5
3F26	D5
3F27	D3
3F28	D4
3F29	D5
3F30	E6
3F31-1	E9
3F31-2	E9
3F31-3	E9
3F31-4	E9
3F32-1	F9
3F32-2	F9
3F32-3	F9
3F32-4	E9
3F33	E6
3F34-1	F9
3F34-2	F9
3F34-3	F9
3F40	F6
3F41	F3
3F42	F3
3F44	F6
3F46	F6
3F48	F6
4F11	D3
4F12	D3
5F10	A10
5F11	B10
7F01	C7
7F02	B4
7F03	B4
7F04-1	C2
7F04-2	D2
FF10	B5
FF11	B8
FF12	B9
FF13	C5
FF14	C9
FF16	D4
FF17	D6
FF18	D4
FF19	D6
FF20	D4
FF21	D6
FF22	E6
FF23	E6
FF24	E6
FF25	F6
FF26	F6
FF27	F6
FF28	F6
FF29	F6
FF30	F6
IF10	B4
IF11	B6
IF12	C5
IF13	C7
IF14	D3
IF15	D4
IF16	D6
IF17	D6
IF18	D2
IF19	E6
IF20	E10
IF21	E10
IF22	E10
IF23	E10
IF24	E10
IF25	E10
IF26	F10
IF27	F10
IF28	F10
IF29	F10
IF30	F10
IF31	F9
IF32	C1

SSB: DVB - Common Interface (Not implemented in this chassis)



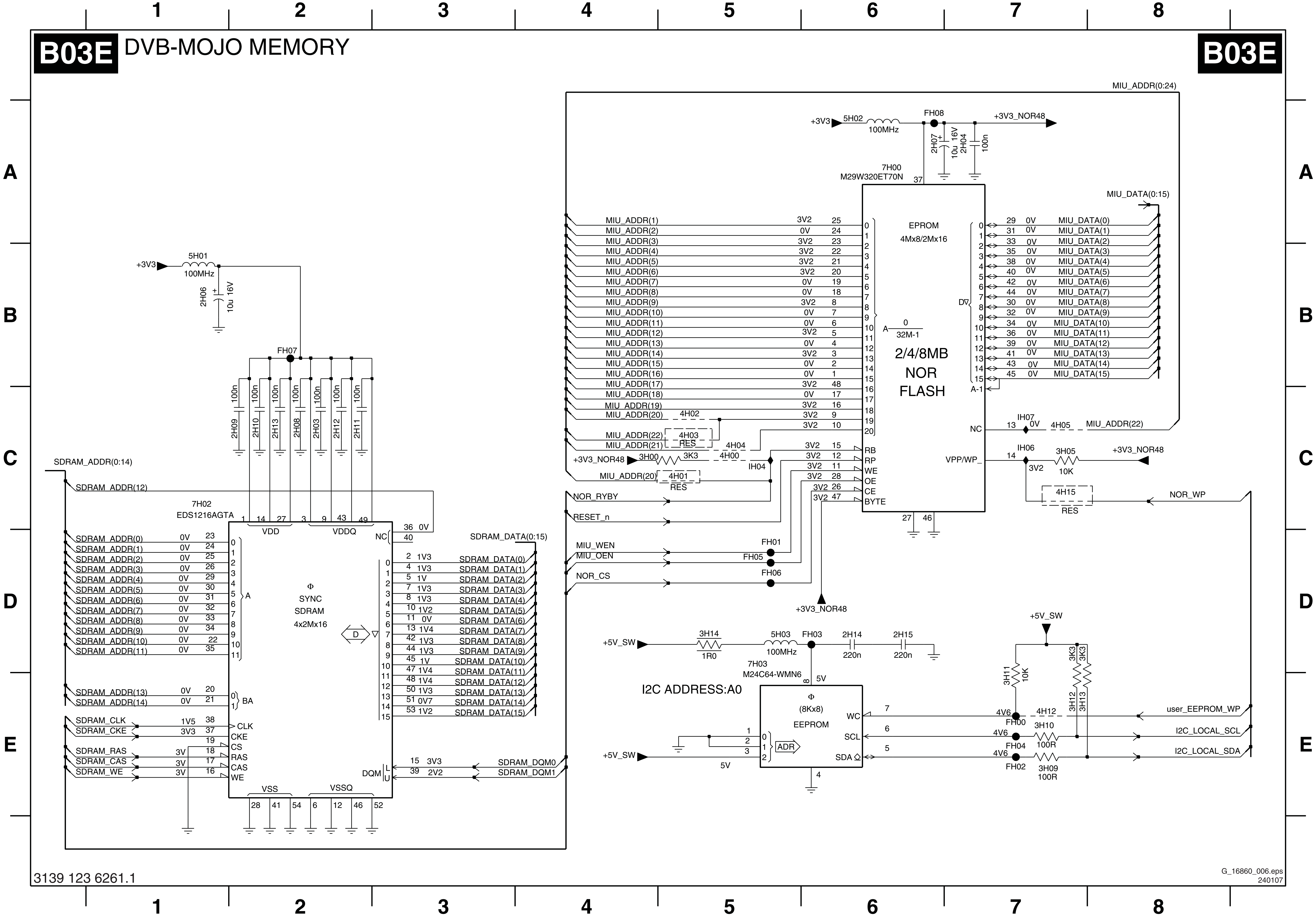
1K00-A H7	FK45 J8
1K00-B H8	FK46 J7
2K00 H4	FK47 J8
2K01 I4	FK48 J7
2K02 H15	FK49 J8
2K03 H15	FK50 J7
2K04 J2	FK51 J8
2K05 G15	FK52 J7
2K06 H15	FK53 J8
2K07 F14	FK54 J7
2K08 H15	FK55 J8
2K09 H15	FK56 J7
2K10 H15	FK57 J8
2K11 I15	FK58 J7
2K12 I15	FK59 J8
2K13 I15	FK60 J7
2K14 F9	FK61 J8
2K15 K4	FK62 J8
2K16 F8	FK63 J7
2K17 G8	FK67 H8
3K00 F2	FK68 H7
3K01 F2	FK69 H8
3K02-1 F4	FK70 H7
3K02-2 F4	FK71 H8
3K02-3 F4	FK72 H7
3K03-1 F5	FK73 H8
3K03-2 F5	FK74 H7
3K03-3 F5	FK75 H8
3K03-4 F5	FK80 H7
3K04 H9	FK81 H15
3K05-1 F5	FK82 I15
3K05-2 F5	FK83 I15
3K05-3 F5	FK84 E15
3K05-4 F6	IK68 C10
3K06 J9	IK69 C10
3K07 J9	IK70 F15
3K08 J6	IK72 F16
3K09 F9	IK73 C10
3K10 E14	IK75 F11
3K11 F16	IK76 C11
3K12 F10	IK84 F8
3K13 F14	IK85 C4
3K15 B9	
3K16 B9	
3K17 B9	
3K18 B9	
3K19 B9	
3K20 B9	
3K21 B9	
3K22 B9	
3K23-1 K4	
3K23-2 K4	
3K23-3 K4	
3K23-4 K4	
3K24-1 K4	
3K24-2 K4	
3K24-3 K4	
3K24-4 K4	
3K25 J4	
3K26 K4	
3K27 B2	
3K28 B2	
3K29 B3	
3K30 B3	
3K31 B3	
3K32 B3	
3K33 B3	
3K34-1 B3	
3K34-2 C3	
3K34-3 C4	
3K34-4 C4	
3K38 B4	
3K39 B4	
3K40 B4	
3K41 B5	
3K42 B5	
3K43 B5	
3K44 B5	
3K45 B5	
3K46 B5	
3K47 B5	
3K48 B6	
3K49 H2	
3K50 H2	
3K51 J6	
3K52 B4	
5K01 G14	
5K02 H14	
5K03 H14	
5K04 I14	
5K05 I14	
7K00 E1	
7K01 H3	
7K02 I3	
7K03 J3	
7K04 F8	
7K05 E15	
FK01 E9	
FK02 E10	
FK05 F9	
FK06 F14	
FK10 H7	
FK11 H8	
FK12 H7	
FK13 H8	
FK14 H7	
FK15 H8	
FK16 H7	
FK17 H8	
FK18 I7	
FK19 I8	
FK20 I7	
FK21 I8	
FK22 I7	
FK23 I8	
FK24 I7	
FK25 I8	
FK26 I7	
FK27 I8	
FK28 I7	
FK29 I8	
FK30 I7	
FK31 I7	
FK32 I7	
FK33 I8	
FK34 I7	
FK35 I8	
FK36 I7	
FK37 I8	
FK38 I7	
FK39 I8	
FK40 I7	
FK41 I8	
FK42 I7	
FK43 I8	
FK44 J7	

SSB: DVB - Mojo (Not implemented in this chassis)



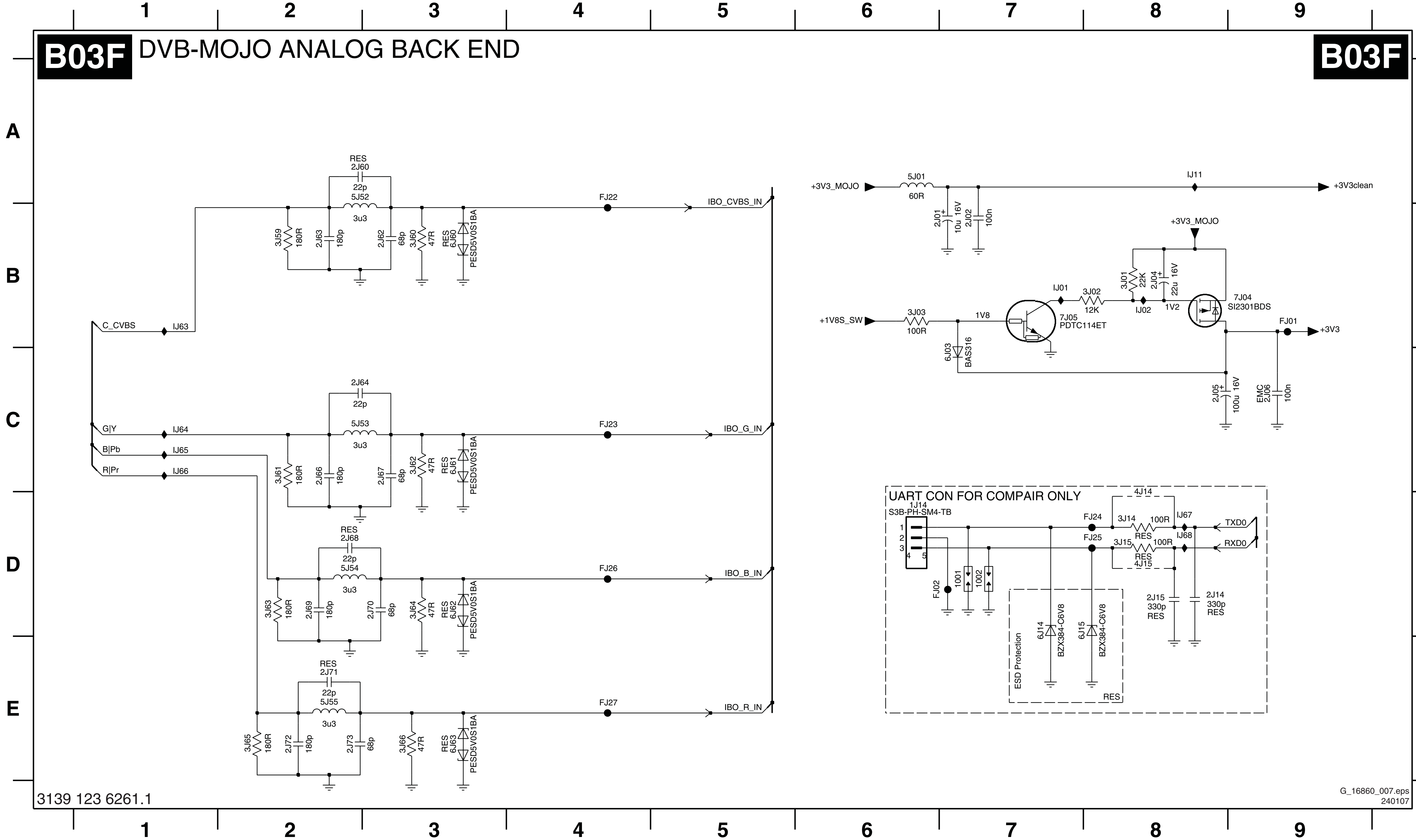
1G01-1 A8	FG41 A7
1G01-2 A9	FG42 C1
1G03 D2	IG13 I8
1G04 I1	IG14 F1
2G02 G5	IG15 G1
2G03 G6	IG16 G1
2G04 G6	IG17 F11
2G05 G6	IG18 F2
2G06 H6	IG19 G2
2G07 H6	IG20 G2
2G08 H6	IG21 E6
2G09 H6	
2G10 H6	
2G11 H6	
2G12 F6	
2G13 G6	
2G14 G6	
2G15 G6	
2G16 G6	
2G17 G6	
2G18 G6	
2G19 H9	
2G20 I9	
2G21 I9	
2G22 H6	
2G23 I6	
2G24 I6	
2G31 B4	
2G32 C5	
2G33 C5	
2G34 D1	
3G11 E6	
3G12 E9	
3G15 A4	
3G16 A4	
3G17 A4	
3G18 A4	
3G19 A4	
3G20 A4	
3G28 E14	
3G29 F14	
3G30 E14	
3G31 E14	
3G33 G2	
3G34 G2	
3G35 F2	
3G36 F14	
3G37 F14	
3G38 A4	
3G40 I8	
3G41 E14	
3G43 H2	
3G44 H2	
3G46 H2	
3G47 I2	
3G48 C6	
3G51 G13	
3G54 G13	
3G55 G13	
3G56-1 H10	
3G56-2 H10	
3G56-3 H10	
3G56-4 H10	
3G57-1 G10	
3G57-2 H10	
3G57-3 G10	
3G57-4 H10	
3G58-1 G10	
3G58-2 H10	
3G58-3 G10	
3G58-4 H10	
3G59-1 H10	
3G59-2 H10	
3G59-3 H10	
3G59-4 H10	
3G60 I11	
3G61 I11	
3G62 I11	
3G63 F10	
3G65 C2	
4G01 B9	
4G02 B9	
4G03 B9	
4G04 C8	
4G05 C8	
4G09 A2	
4G10 A2	
4G31 C4	
5G01 F5	
5G02 G5	
5G03 C4	
5G04 I6	
7G00-1 F7	
7G00-2 E3	
7G00-3 F3	
7G00-4 A12	
7G00-5 G12	
7G00-6 H4	
7G00-7 D12	
7G00-8 D7	
7G06 C1	
FG10 A7	
FG11 A7	
FG12 A7	
FG13 A9	
FG14 A7	
FG15 A7	
FG16 A7	
FG17 H2	
FG18 C6	
FG19 H2	
FG20 E13	
FG21 E13	
FG22 E13	
FG23 E13	
FG24 E14	
FG25 E14	
FG26 E9	
FG27 F14	
FG28 F13	
FG29 F13	
FG30 F13	
FG31 H2	
FG32 H3	
FG33 H2	
FG34 H3	
FG35 H3	
FG36 I3	
FG37 C5	
FG39 F6	
FG40 A7	

SSB: DVB - Mojo Memory (Not implemented in this chassis)



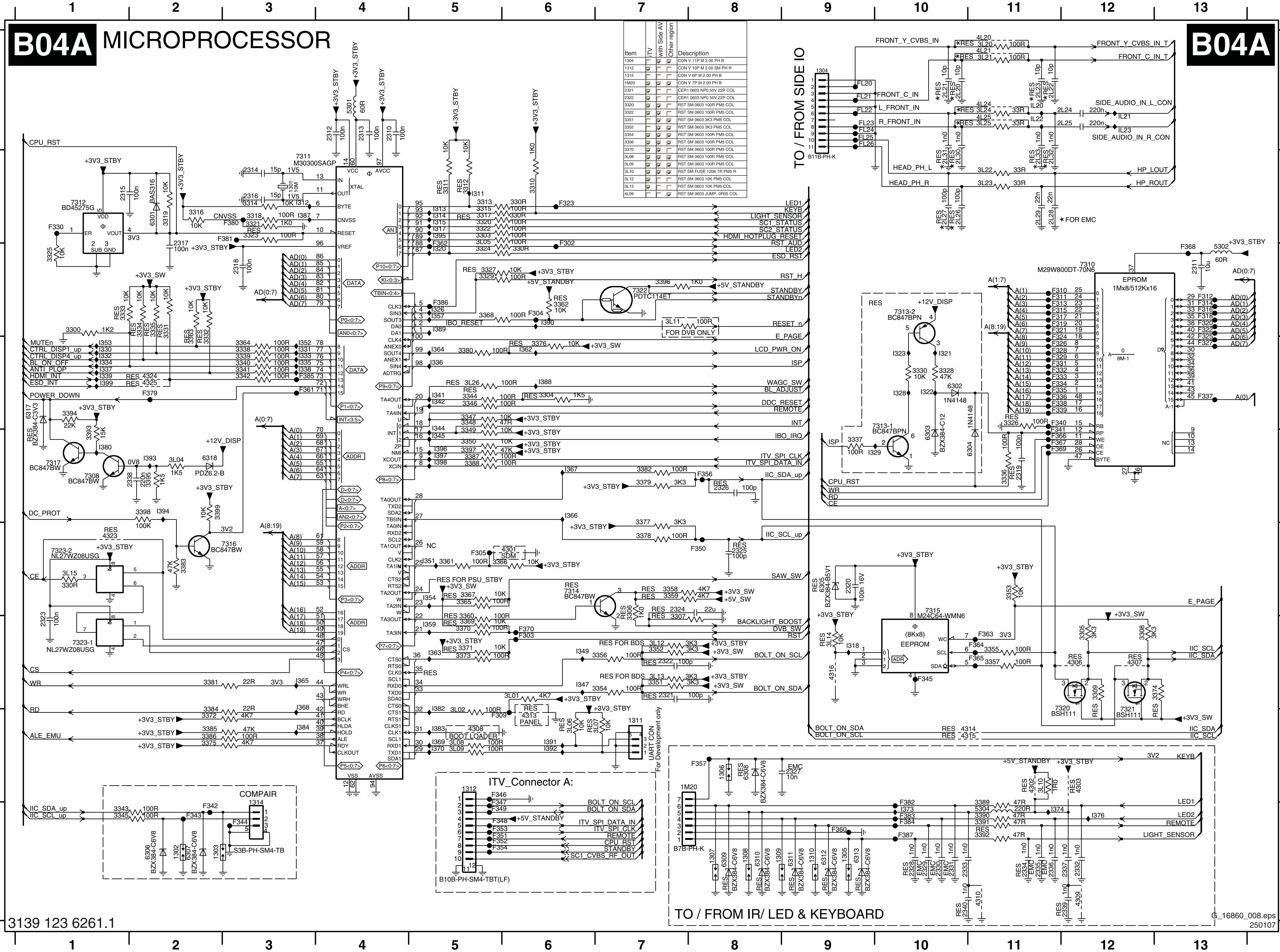
2H03 C2
2H04 A7
2H06 B1
2H07 A6
2H08 C2
2H09 C2
2H10 C2
2H11 C2
2H12 C2
2H13 C2
2H14 D6
2H15 D6
3H00 C4
3H05 C7
3H09 E7
3H10 E7
3H11 E7
3H12 E7
3H13 E7
3H14 D5
4H00 C5
4H01 C5
4H02 C5
4H03 C5
4H04 C5
4H05 C7
4H12 E7
4H15 C7
5H01 B1
5H02 A6
5H03 D5
7H00 A6
7H02 C1
7H03 D5
FH00 E7
FH01 D5
FH02 E7
FH03 D6
FH04 E7
FH05 D5
FH06 D5
FH07 B2
FH08 A6
IH04 C5
IH06 C7
IH07 C7

SSB: DVB - Mojo Analog Back End (Not implemented in this chassis)



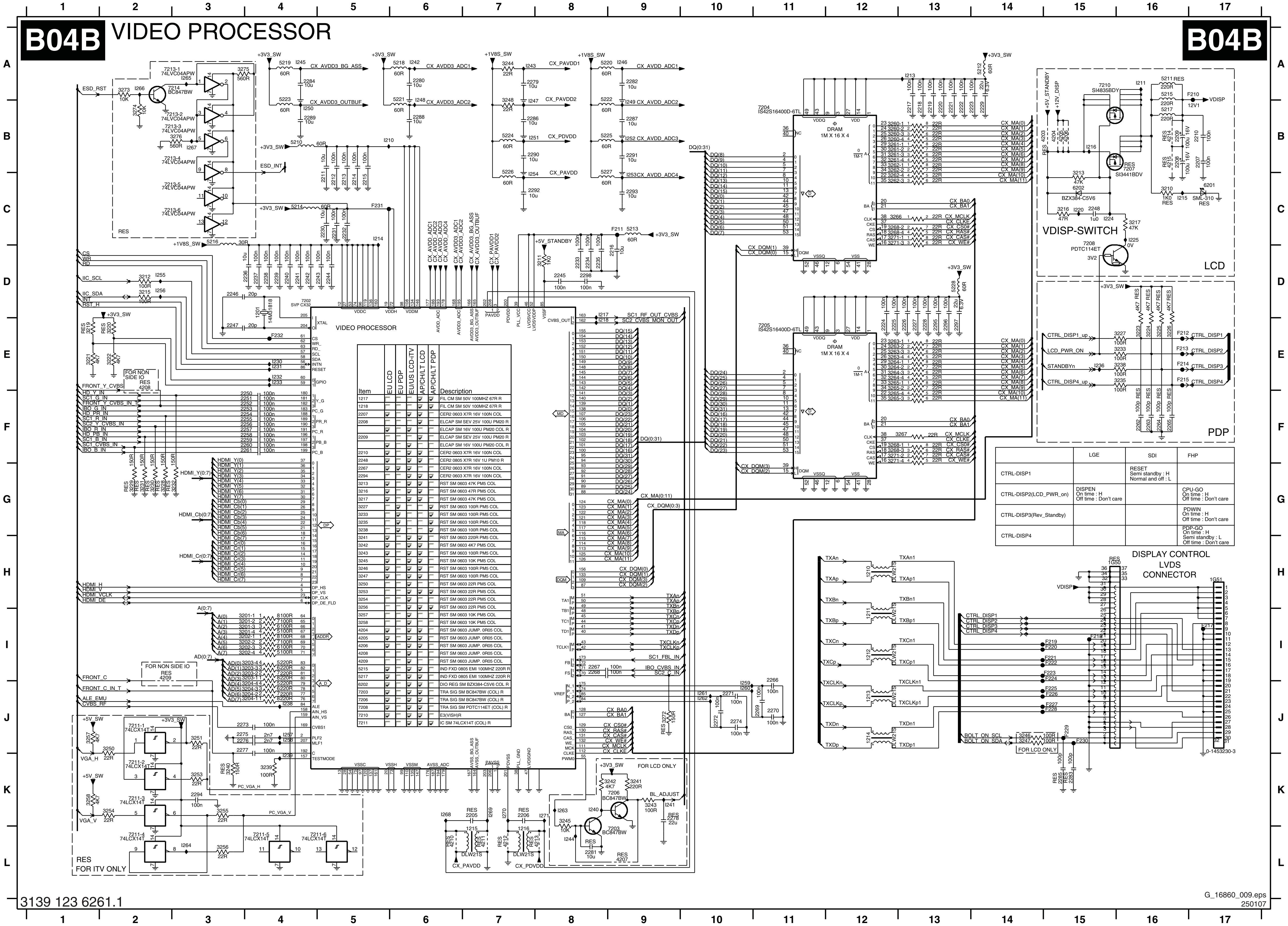
1001 D7	IJ66 C1
1002 D7	IJ67 D8
1J14 D6	IJ68 D8
2J01 B7	
2J02 B7	
2J04 B8	
2J05 C8	
2J06 C9	
2J14 D8	
2J15 D8	
2J60 A2	
2J62 B3	
2J63 B2	
2J64 C2	
2J66 C2	
2J67 C3	
2J68 D2	
2J69 D2	
2J70 D3	
2J71 E2	
2J72 E2	
2J73 E2	
3J01 B8	
3J02 B8	
3J03 B6	
3J14 D8	
3J15 D8	
3J59 B2	
3J60 B3	
3J61 C2	
3J62 C3	
3J63 D2	
3J64 D3	
3J65 E2	
3J66 E3	
4J14 D8	
4J15 D8	
5J01 A6	
5J52 A2	
5J53 C2	
5J54 D2	
5J55 E2	
6J03 C7	
6J14 D7	
6J15 D8	
6J60 B3	
6J61 C3	
6J62 D3	
6J63 E3	
7J04 B9	
7J05 B7	
FJ01 B9	
FJ02 D6	
FJ22 A4	
FJ23 C4	
FJ24 D8	
FJ25 D8	
FJ26 D4	
FJ27 E4	
IJ01 B7	
IJ02 B8	
IJ11 A8	
IJ63 B1	
IJ64 C1	
IJ65 C1	

SSB: Micro Processor



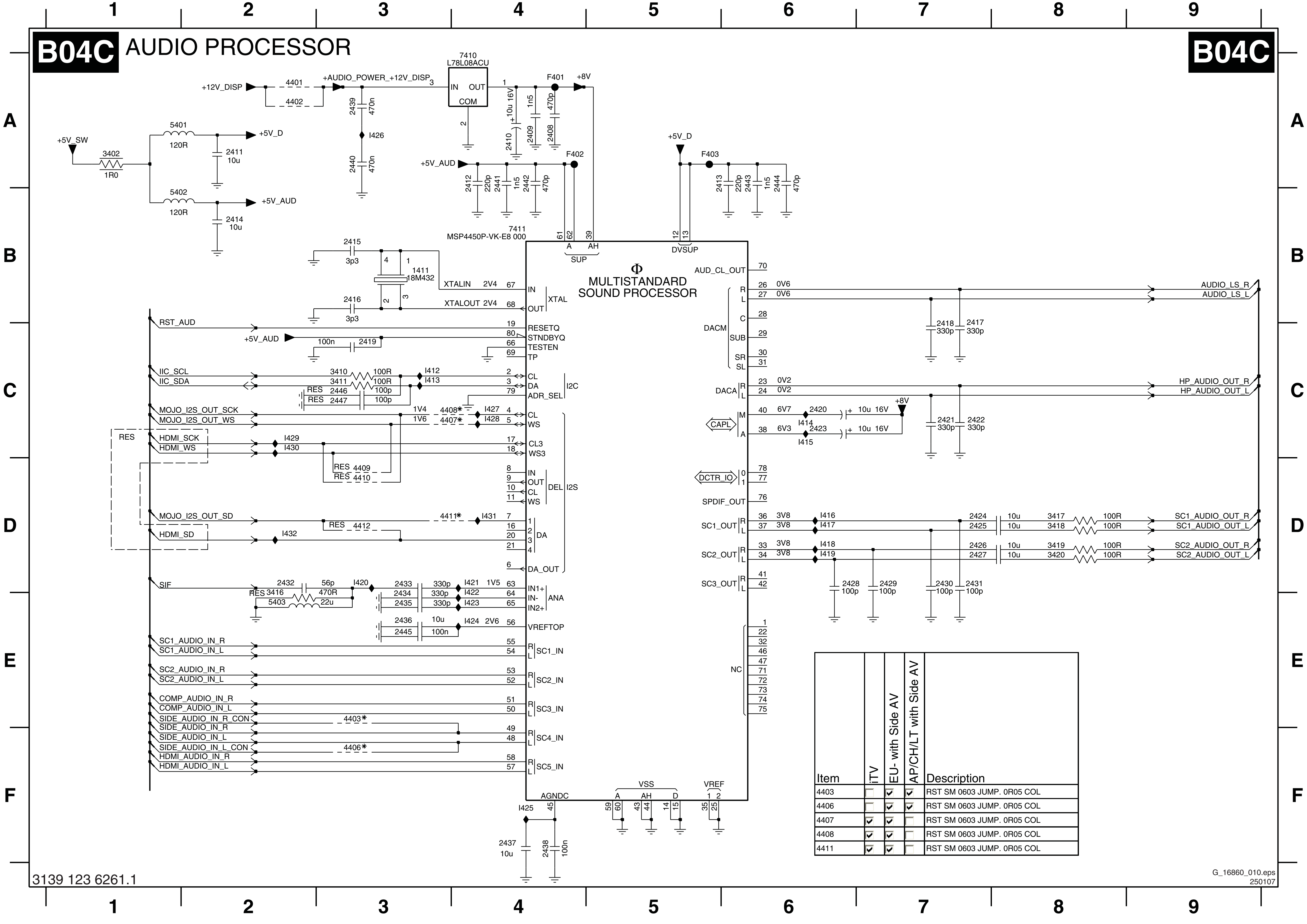
1301 B3	3376 D6	F341 E11
1302 I2	3377 E7	F342 I2
1303 I2	3378 F7	F343 I2
1304 A9	3379 E7	F344 I3
1305 I9	3380 D5	F345 G10
1306 H8	3381 G2	F346 H5
1307 I8	3382 E7	F347 I5
1308 I8	3383 F2	F348 I5
1309 I8	3384 H2	F349 I5
1310 I9	3385 H2	F350 F8
1311 H7	3386 H2	F351 I5
1312 H5	3387 E5	F352 I5
1314 I3	3388 E5	F353 I5
1M20 H8	3389 I11	F354 I5
2310 A4	3390 I11	F356 E8
2311 C13	3391 I11	F357 H8
2312 A4	3392 I11	F360 I9
2313 A4	3393 E1	F361 D3
2314 B3	3394 D1	F362 C5
2315 B1	3395 E2	F363 G11
2316 B3	3396 C7	F364 G11
2317 B2	3397 E5	F365 G11
2318 C3	3398 E2	F366 E11
2319 E11	3399 E2	F367 E11
2320 F9	3L01 G6	F368 C13
2321 G7	3L02 H5	F369 E11
2322 G7	3L04 E2	F370 G6
2323 G1	3L05 B5	F379 D2
2324 F7	3L06 H6	F380 B3
2325 F8	3L07 H7	F381 B3
2326 E8	3L08 H5	F382 I10
2327 H9	3L09 H5	F383 I10
2328 I10	3L10 H11	F384 I10
2329 I10	3L11 C7	F385 D3
2330 I10	3L12 G7	F386 C5
2331 I10	3L13 G7	F387 I10
2332 I12	3L14 G9	FL20 A9
2333 I10	3L15 F1	FL21 A9
2334 I11	3L20 A11	FL22 A9
2335 I11	3L21 A11	FL23 A9
2336 I11	3L22 B11	FL24 A9
2337 I12	3L23 B11	FL25 A9
2338 E2	3L24 A11	FL26 A9
2339 I12	3L25 A11	I311 B5
2340 I10	3L26 D5	I312 B3
2L20 A10	4301 F6	I313 B5
2L21 A10	4302 H11	I314 B5
2L22 A11	4303 H12	I315 B5
2L23 A11	4306 G12	I317 B5
2L24 A12	4307 G12	I318 G9
2L25 A12	4308 H5	I320 C5
2L26 B10	4309 I12	I321 D10
2L27 B10	4310 I11	I322 D10
2L28 B11	4313 H6	I323 D10
2L29 B11	4314 H11	I326 C5
2L30 B10	4315 H11	I328 D10
2L31 B10	4316 G9	I329 E9
2L32 B11	4323 F1	I330 D1
2L33 B11	4324 D2	I331 D3
3300 C1	4325 D2	I332 D1
3303 B5	4L20 A11	I333 D3
3304 D6	4L21 A11	I334 D1
3305 G12	4L24 A11	I335 D3
3306 F7	4L25 A11	I336 D5
3307 G7	5301 A4	I337 D1
3308 G12	5302 C13	I338 D3
3309 G12	5304 I11	I339 D1
3310 B6	6301 B2	I341 D5
3311 B5	6302 D10	I342 D5
3312 B5	6303 E10	I344 D5
3313 B5	6304 E10	I345 E5
3314 B3	6305 F9	I347 G6
3315 B5	6306 I2	I349 G6
3316 B2	6307 I2	I351 F5
3317 B5	6308 H8	I352 D3
3318 B3	6309 I8	I353 D1
3319 B2	6310 I8	I354 F5
3320 B5	6311 I9	I357 C5
3321 B3	6312 I9	I359 G5
3322 B5	6313 I9	I362 D6
3323 B3	6317 D1	I363 G5
3324 C5	6318 E2	I364 D5
3325 C1	7308 E1	I365 G3
3326 D11	7310 C12	I366 E6
3327 C5	7311 B3	I367 E6
3328 D10	7312 B1	I368 G3
3329 C5	7313-1 D9	I369 H5
3330 D10	7313-2 C10	I370 H5
3331 C2	7314 F6	I373 I10
3332 D2	7315 F10	I374 I11
3333 C1	7316 F2	I376 I12
3334 C2	7317 E1	I380 E1
3335 C2	7320 H11	I382 G5
3336 E11	7321 H12	I383 H5
3337 E9	7322 C7	I384 H3
3338 D3	7323-1 G1	I387 B3
3339 D3	7323-2 F1	I388 D6
3340 D3	F302 C6	I389 C5
3341 D3	F303 G6	I390 C6
3342 D3	F304 C6	I391 H6
3343 I1	F305 F5	I392 H6
3344 D5	F309 H5	I393 E2
3345 I1	F310 C11	I394 E2
3346 D5	F311 C11	I395 B5
3347 D5	F312 C13	I396 E5
3348 D5	F313 C11	I397 E5
3349 E5	F314 C13	I398 E5
3350 E5	F315 C11	I399 D1
3351 G7	F316 C13	IL20 A11
3352 G7	F317 C11	IL21 A12
3353 F11	F318 C13	IL22 A11
3354 G7	F319 C11	IL23 A12
3355 G11	F320 C13	
3356 G7	F321 C11	
3357 G11	F322 C13	
3358 F7	F323 B6	
3359 F7	F324 D11	
3360 G5	F325 D13	
3361 F5	F326 D11	
3362 C6	F327 D13	
3363 D2	F328 D11	
3364 D3	F329 D11	
3365 F5	F330 B1	
3366 F5	F331 D11	
3367 F5	F332 D11	
3368 C5	F333 D11	
3369 G5	F334 D11	
3370 G5	F335 D11	
3371 G5	F336 D11	
3372 H2	F337 D13	
3373 G5	F338 D11	
3374 G13	F339 D11	
3375 H2	F340 D11	

SSB: Video Processor



1201 D4	3241 K9	I232 E4
1210 H12	3242 K9	I233 E4
1211 I12	3243 K9	I236 E15
1212 I12	3244 A7	I238 J4
1213 J12	3245 K8	I239 K4
1214 J12	3246 J14	I240 K8
1215 L7	3247 J14	I241 K9
1216 L7	3248 B7	I242 A6
1G50 H15	3250 J2	I243 A7
1G51 H17	3251 J3	I244 L8
2205 K7	3253 K3	I245 A4
2206 K7	3254 K2	I246 A9
2207 B17	3255 K3	I247 B7
2208 B16	3256 L3	I248 A6
2209 B16	3257 J1	I249 B9
2210 B17	3258 K1	I250 B4
2211 C5	3260-1 B12	I251 B7
2212 C5	3260-2 B12	I252 B9
2213 C5	3260-3 B12	I253 C9
2214 C5	3260-4 B12	I254 C7
2215 C5	3261-1 B12	I255 D2
2216 D9	3261-2 B12	I256 D2
2217 B13	3261-3 B12	I257 J4
2218 B13	3261-4 B12	I258 J4
2219 B13	3262-1 B12	I259 J10
2220 B13	3262-2 B12	I260 J10
2221 B13	3262-3 C12	I261 J10
2222 B13	3262-4 C12	I262 J10
2223 B14	3263-1 E12	I263 K8
2224 E12	3263-2 E12	I264 L3
2225 E12	3263-3 E12	I265 A3
2226 E13	3263-4 E12	I266 A2
2227 E13	3264-1 E12	I267 B3
2228 E13	3264-2 E12	I268 K6
2229 B14	3264-3 E12	I269 K7
2230 C5	3264-4 E12	I270 K7
2231 C5	3265-1 E12	I271 K8
2232 C5	3265-2 E12	
2233 D8	3265-3 F12	
2234 D8	3265-4 F12	
2235 D8	3266 C12	
2236 D3	3267 F13	
2237 D4	3268-1 F12	
2238 D4	3268-2 C12	
2239 D4	3268-3 F12	
2240 D4	3268-4 C12	
2241 D4	3271-1 C12	
2242 D4	3271-2 F12	
2243 D5	3271-3 C12	
2244 D5	3271-4 F12	
2245 D8	3272 J9	
2246 D3	3273 A2	
2247 E3	3274 B2	
2248 C15	3275 A3	
2250 F4	3276 B3	
2251 F4	4203 B14	
2252 F4	4204 B15	
2253 F4	4205 B15	
2254 F4	4206 B15	
2255 F4	4207 L9	
2256 F4	4208 E2	
2257 F4	4209 I2	
2258 F4	4210 L6	
2259 F4	4211 L7	
2260 F4	4212 L7	
2261 F4	4213 L8	
2262 F16	4214 B16	
2263 F16	4215 B16	
2264 F16	5210 B4	
2265 F16	5211 A16	
2266 J11	5212 A14	
2267 I8	5213 C9	
2268 I8	5214 C4	
2269 J11	5215 A16	
2270 J11	5216 C3	
2271 J10	5217 B16	
2272 J10	5218 A6	
2273 J3	5219 A4	
2274 J10	5220 A8	
2275 J3	5221 B6	
2276 J3	5222 B8	
2277 J3	5223 B4	
2278 K9	5224 B7	
2279 A7	5225 B8	
2280 A6	5226 C7	
2281 L8	5227 C8	
2282 A9	5228 D13	
2283 K15	6201 C17	
2284 A4	6202 C15	
2285 K15	7202 D4	
2286 B7	7203 L9	
2287 B9	7204 B11	
2288 B6	7205 E11	
2289 B4	7206 K9	
2290 B7	7207 B16	
2291 B9	7208 C15	
2292 C7	7210 A15	
2293 C9	7211-1 J2	
2294 K3	7211-2 K2	
2295 E13	7211-3 K2	
2296 E13	7211-4 L2	
2297 E13	7211-5 L4	
2298 D8	7211-6 L5	
3201-1 I4	7213-1 A3	
3201-2 I4	7213-2 B3	
3201-3 I4	7213-3 B3	
3201-4 I4	7213-4 B3	
3202-1 I4	7213-5 C3	
3202-2 I4	7213-6 C3	
3202-3 I4	7214 A2	
3202-4 I4	F210 A17	
3203-1 I4	F211 C9	
3203-2 I4	F212 E16	
3203-3 I4	F213 E16	
3203-4 I4	F214 E16	
3204-1 J4	F215 E16	
3204-2 J4	F217 I17	
3204-3 J4	F218 I15	
3204-4 J4	F219 I15	
3210 C16	F220 I15	
3211 D8	F221 I15	
3212 D2	F222 I15	
3213 C15	F223 I15	
3215 D2	F224 I15	
3216 C15	F225 J15	
3217 C16	F226 J15	
3219 E1	F227 J15	
3220 E2	F228 J15	
3221 E1	F229 J15	
3222 E2	F230 J15	
3223 E16	F231 C5	
3224 E16	F232 E4	
3225 E16	I210 B5	
3226 E16	I211 A16	
3227 E16	I213 A13	
3228 G2	I214 C5	
3229 G2	I215 C16	
3230 G2	I216 B15	
3231 G2	I217 D8	
3232 G3	I218 E8	
3233 E16	I220 C15	
3235 E16	I224 C15	
3238 E16	I225 C16	
3239 K4	I230 E4	
3240 K3	I231 E4	

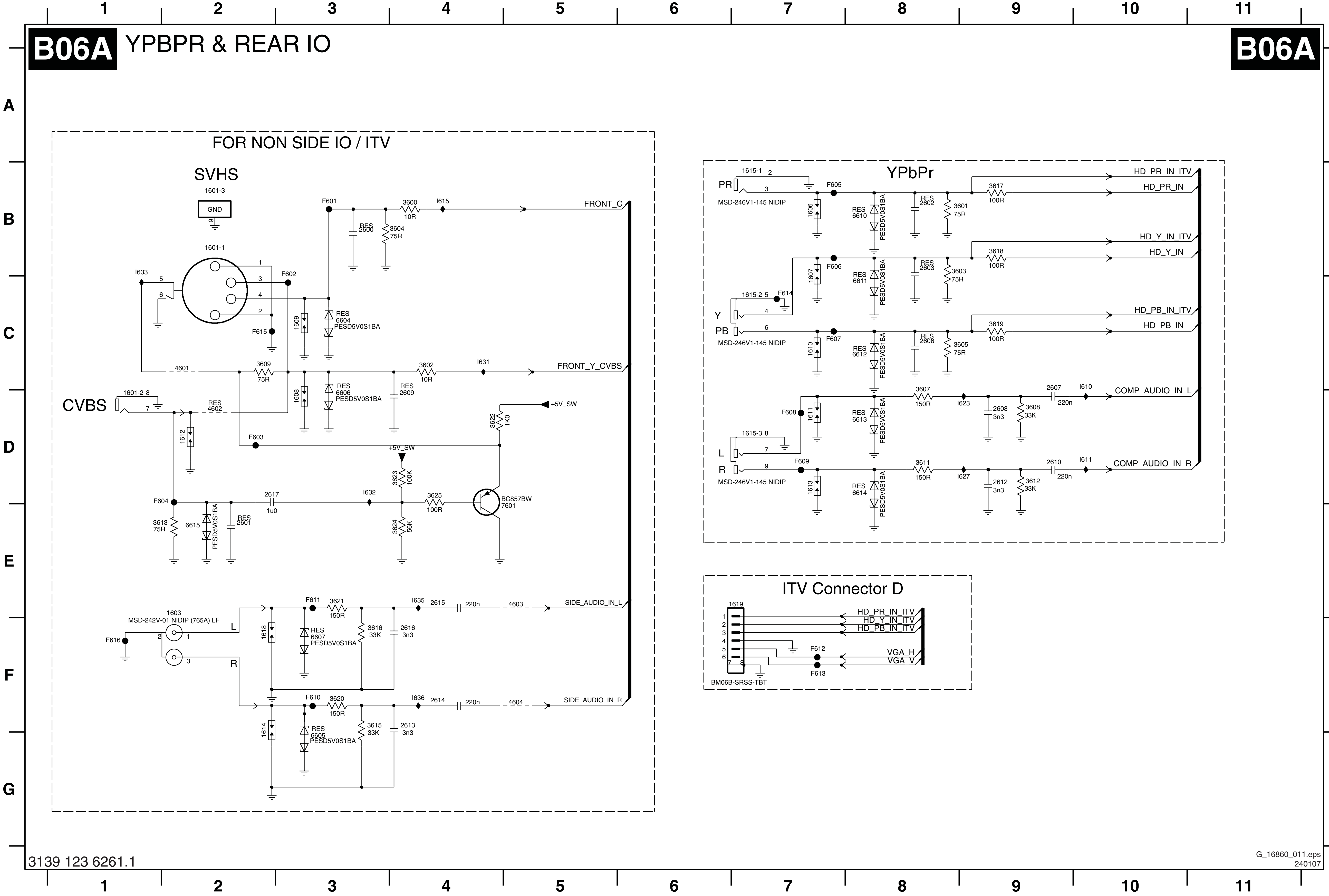
SSB: PNX2015: Audio Processor



Item	iTV	EU- with Side AV	AP/CH/LT with Side AV	Description
4403	☐	☑	☑	RST SM 0603 JUMP. 0R05 COL
4406	☐	☑	☑	RST SM 0603 JUMP. 0R05 COL
4407	☑	☑	☐	RST SM 0603 JUMP. 0R05 COL
4408	☑	☑	☐	RST SM 0603 JUMP. 0R05 COL
4411	☑	☑	☐	RST SM 0603 JUMP. 0R05 COL

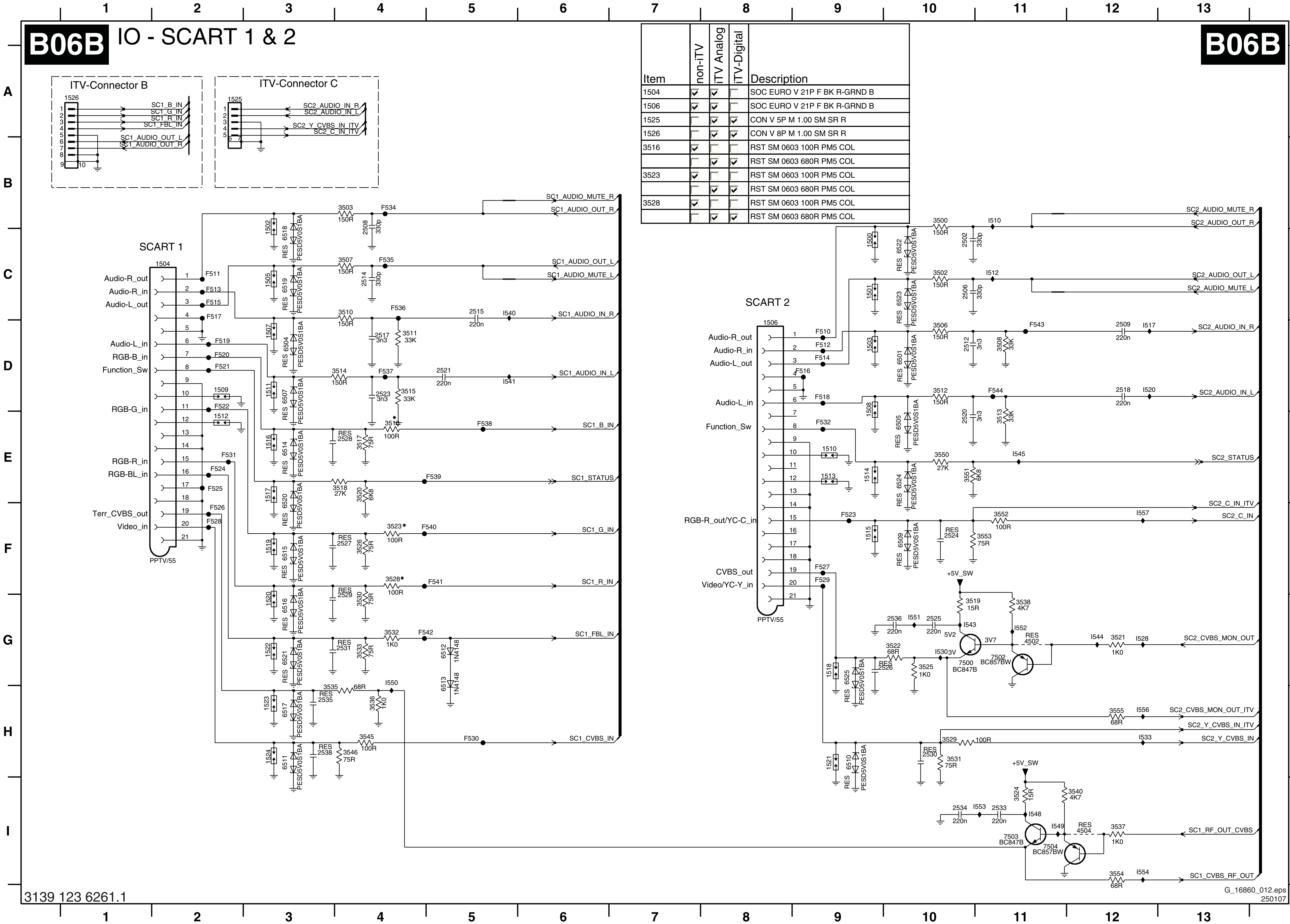
1411 B3
2408 A4
2409 A4
2410 A4
2411 A2
2412 A4
2413 A6
2414 B2
2415 B3
2416 B3
2417 B7
2418 B7
2419 C3
2420 C6
2421 C7
2422 C7
2423 C6
2424 D7
2425 D7
2426 D7
2427 D7
2428 D6
2429 D7
2430 D7
2431 D7
2432 D2
2433 D3
2434 E3
2435 E3
2436 E3
2437 F4
2438 F4
2439 A3
2440 A3
2441 A4
2442 A4
2443 A6
2444 A6
2445 E3
2446 C3
2447 C3
3402 A1
3410 C3
3411 C3
3416 E2
3417 D8
3418 D8
3419 D8
3420 D8
4401 A2
4402 A2
4403 E3
4406 F3
4407 C3
4408 C3
4409 D3
4410 D3
4411 D3
4412 D3
5401 A1
5402 B1
5403 E2
7410 A4
7411 B4
F401 A4
F402 A4
F403 A5
I412 C3
I413 C3
I414 C6
I415 C6
I416 D6
I417 D6
I418 D6
I419 D6
I420 D3
I421 D4
I422 D4
I423 E4
I424 E4
I425 F4
I426 A3
I427 C4
I428 C4
I429 C2
I430 C2
I431 D4
I432 D2

SSB: YPBPR & Rear IO



1601-1 B2
1601-2 D1
1601-3 B2
1603 E2
1606 B7
1607 C7
1608 D3
1609 C3
1610 C7
1611 D7
1612 D2
1613 D7
1614 F2
1615-1 B7
1615-2 C7
1615-3 D7
1618 F2
1619 E7
2600 B3
2601 E2
2602 B8
2603 B8
2606 C8
2607 C9
2608 D9
2609 D4
2610 D9
2612 D9
2613 F4
2614 F4
2615 E4
2616 F4
2617 D2
3600 B4
3601 B8
3602 C4
3603 B8
3604 B4
3605 C8
3607 D8
3608 D9
3609 C2
3611 D8
3612 D9
3613 E1
3615 F3
3616 F3
3617 B9
3618 B9
3619 C9
3620 F3
3621 E3
3622 D4
3623 D4
3624 E4
3625 D4
4601 C2
4602 D2
4603 E5
4604 F5
6604 C3
6605 G3
6606 D3
6607 F3
6610 B8
6611 C8
6612 C8
6613 D8
6614 D8
6615 E2
7601 D4
F601 B3
F602 C3
F603 D2
F604 D1
F605 B7
F606 B7
F607 C7
F608 D7
F609 D7
F610 F3
F611 E3
F612 F7
F613 F7
F614 C7
F615 C2
F616 F1
I610 C10
I611 D10
I615 B4
I623 D9
I627 D9
I631 C4
I632 D3
I633 B1
I635 E4
I636 F4

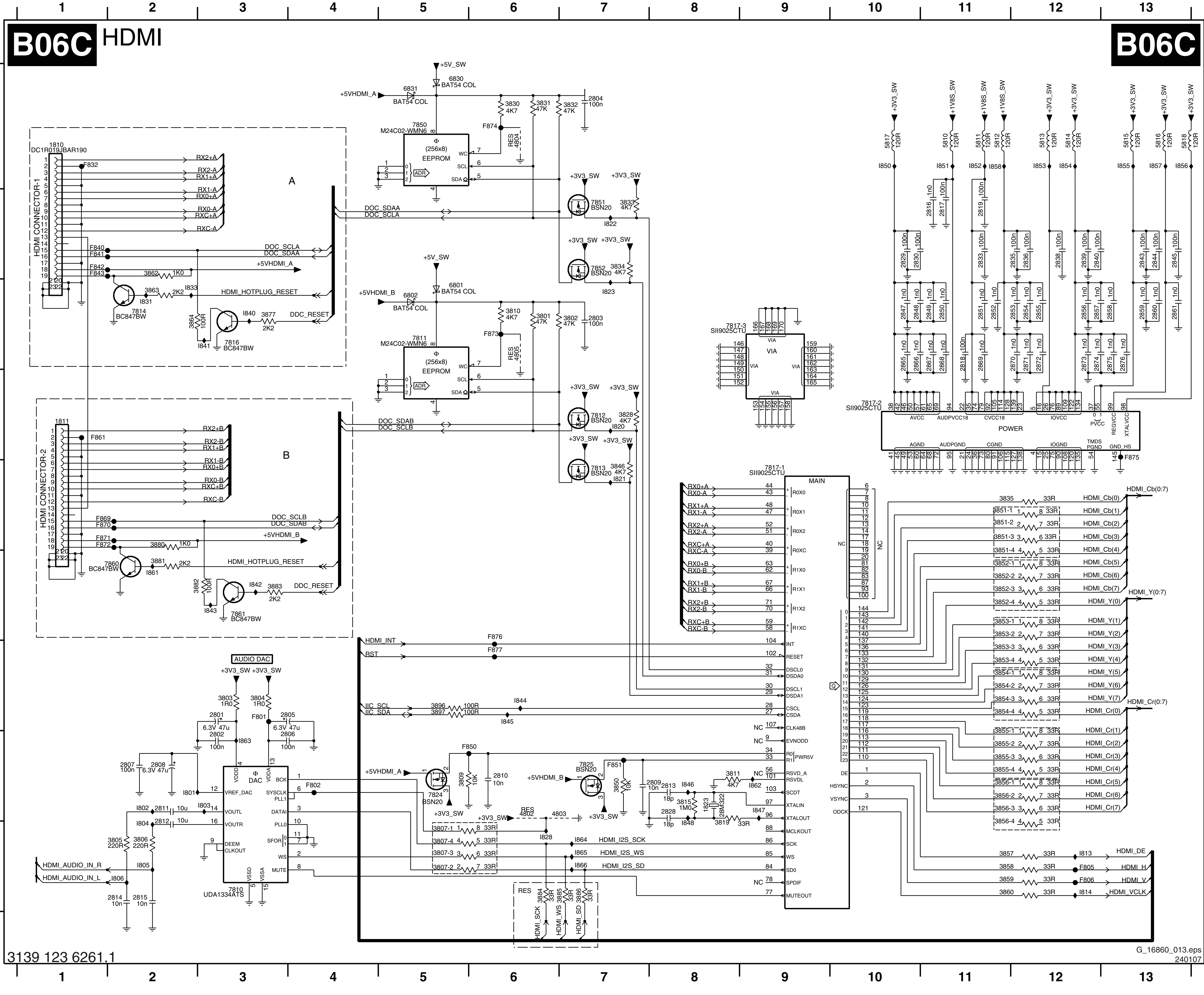
SSB: I/O Scart 1 & 2



Item	non-iTV	iTV Analog	iTV-Digital	Description
1504	✔	✔		SOC EURO V 21P F BK R-GRND B
1506	✔	✔		SOC EURO V 21P F BK R-GRND B
1525		✔	✔	CON V 5P M 1.00 SM SR R
1526		✔	✔	CON V 8P M 1.00 SM SR R
3516	✔			RST SM 0603 100R PM5 COL
		✔	✔	RST SM 0603 680R PM5 COL
3523	✔			RST SM 0603 100R PM5 COL
		✔	✔	RST SM 0603 680R PM5 COL
3528	✔			RST SM 0603 100R PM5 COL
		✔	✔	RST SM 0603 680R PM5 COL

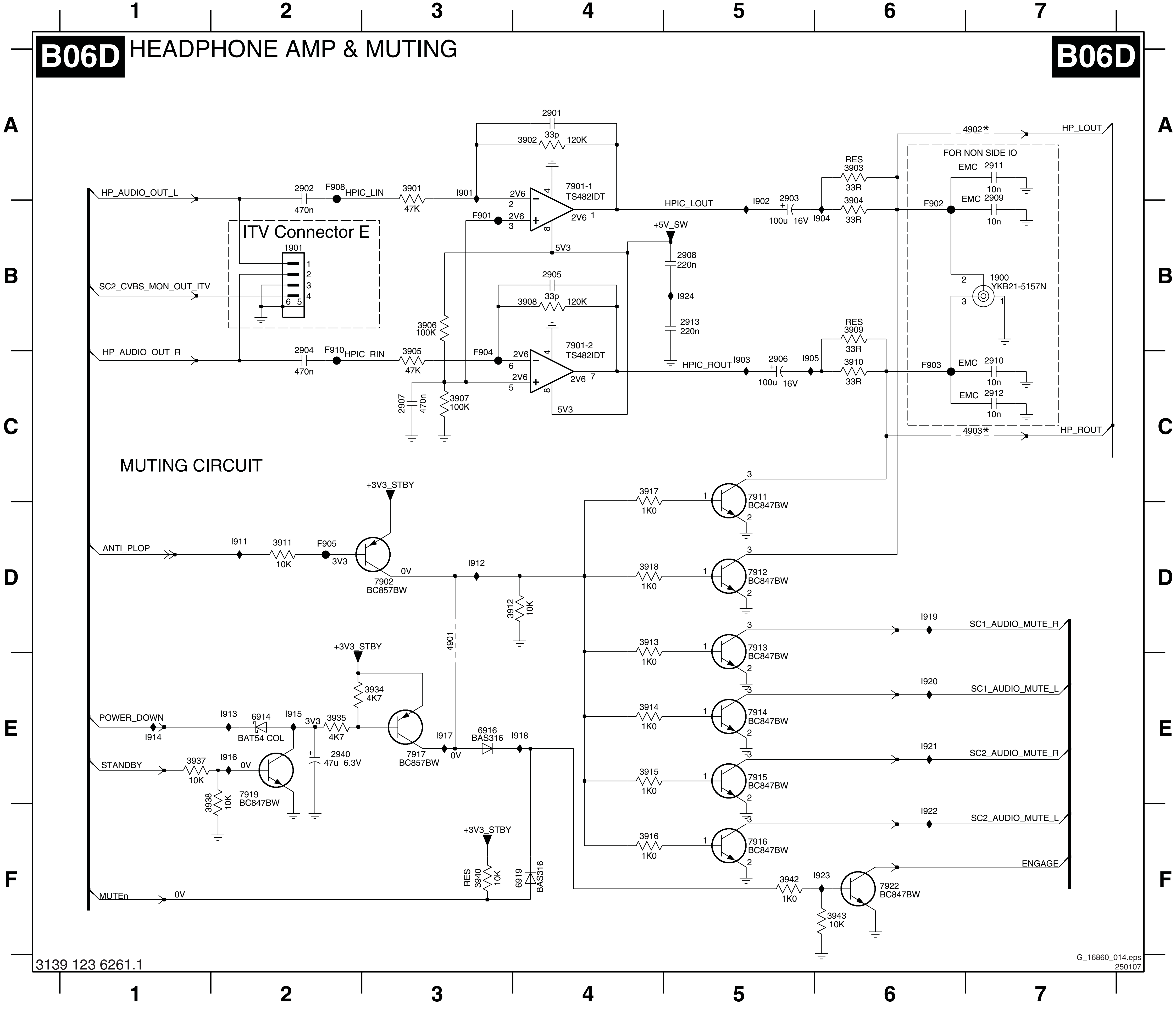
1500 C9
1501 C9
1502 C3
1503 D9
1504 C2
1505 C3
1506 D8
1507 D3
1508 E9
1509 D2
1510 E9
1511 D3
1512 E2
1513 E9
1514 E9
1515 F9
1516 E3
1517 E3
1518 G9
1519 F3
1520 G3
1521 H9
1522 G3
1523 H3
1524 H3
1525 A2
1526 A1
2502 C10
2506 C10
2508 B4
2509 D12
2512 D10
2514 C4
2515 C5
2517 D4
2518 D12
2520 E10
2521 D5
2523 D4
2524 F10
2525 G10
2526 G10
2527 F4
2528 E4
2529 F4
2530 H10
2531 G4
2533 I11
2534 I10
2535 H3
2536 G10
2538 H3
3500 B10
3502 C10
3503 B4
3506 D10
3507 C4
3508 D11
3510 C4
3511 D4
3512 D10
3513 E11
3514 D4
3515 D4
3516 E4
3517 E4
3518 E3
3519 G10
3520 E4
3521 G12
3522 G10
3523 F4
3524 I11
3525 G10
3526 F4
3528 F4
3529 H10
3530 G4
3531 H10
3532 G4
3533 G4
3535 H3
3536 H4
3537 I12
3538 G11
3540 I12
3545 H4
3546 H4
3550 E10
3551 E10
3552 F11
3553 F11
3554 I12
3555 H12
4502 G11
4504 I12
6501 D10
6504 D3
6505 E10
6507 D3
6509 F10
6510 H9
6511 H3
6512 G5
6513 G5
6514 E3
6515 F3
6516 G3
6517 H3
6518 C3
6519 C3
6520 E3
6521 G3
6522 C10
6523 C10
6524 E10
6525 G9
7500 G10
7502 G11
7503 I11
7504 I11
F510 D9
F511 C2
F512 D9
F513 C2
F514 D9
F515 C2
F516 D9
F517 C2
F518 D9
F519 D2
F520 D2
F521 D2
F522 D2
F523 F9
F524 E2
F525 E2
F526 F2
F527 F9
F528 F2
F529 F9
F530 H5
F531 E2
F532 E9
F534 B4
F535 C4
F536 C4
F537 D4
F538 E5
F539 E4
F540 F4
F541 F5
F542 G4
F543 D11
F544 D11
I510 B11
I512 C11
I517 D12
I520 D12
I528 G12
I530 G10
I533 H12
I540 C5
I541 D5
I543 G10
I544 G12
I545 E11
I548 I11
I549 I11
I550 G4
I551 G10
I552 G11
I553 I11
I554 I12
I556 H12
I557 F12

SSB: HDMI



1810 A1
1811 D1
1823 H8
2801 G3
2802 H3
2803 C7
2804 A7
2805 G3
2806 H3
2807 H2
2808 H2
2809 H8
2810 H6
2811 H2
2812 I2
2813 H8
2814 I2
2815 I2
2816 B11
2817 B11
2818 C11
2819 B11
2828 H8
2829 B10
2830 B10
2833 B11
2835 B12
2836 B12
2838 B12
2839 B12
2840 B12
2843 B13
2844 B13
2845 B13
2847 C10
2848 C10
2849 C11
2850 C11
2851 C11
2852 C11
2853 C12
2854 C12
2855 C12
2856 C12
2857 C12
2858 C13
2859 C13
2860 C13
2861 C13
2865 C10
2866 C10
2867 C11
2868 C11
2869 C11
2870 C12
2871 C12
2872 C12
2873 C12
2874 C12
2875 C13
2876 C13
3801 C6
3802 C7
3803 G3
3804 G3
3805 I2
3806 I2
3807-1 I5
3807-2 I5
3807-3 I5
3807-4 I5
3809 H5
3810 C6
3811 H8
3815 H8
3819 I8
3828 D7
3830 A6
3831 A6
3832 A7
3833 B7
3834 B7
3835 E11
3846 E7
3850 H7
3851-1 E11
3851-2 E11
3851-3 E11
3851-4 F11
3852-1 F11
3852-2 F11
3852-3 F11
3852-4 F11
3853-1 F11
3853-2 F11
3853-3 G11
3853-4 G11
3854-1 G11
3854-2 G11
3854-3 G11
3854-4 G11
3855-1 H11
3855-2 H11
3855-3 H11
3855-4 H11
3856-1 H11
3856-2 H11
3856-3 H11
3856-4 I11
3857 I11
3858 I11
3859 I11
3860 I11
3862 B2
3863 C2
3864 C2
3877 C3
3880 E2
3881 F2
3882 F2
3883 F3
3884 I6
3885 I7
3886 I7
3896 G5
3897 G5
4802 H6
4803 H6
4804 A6
4805 C6
5810 A11
5811 A11
5812 A11
5813 A12
5814 A12
5815 A13
5816 A13
5817 A10
5818 A13
6801 C5
6802 C5
6830 A5
6831 A5
7810 I3
7811 C5
7812 D7
7813 E7
7814 C2
7816 C3
7817-1 E9
7817-2 D10
7817-3 C9
7824 H5
7825 H7
7850 A5
7851 B7
7852 B7
7860 F2
7861 F3
F801 G3
F802 H4
F805 I12
F806 I12
F832 A1
F840 B1
F841 B1
F842 B1
F843 B1
F850 H6
F851 H7
F861 D1
F869 E1
F870 E1
F871 E1
F872 E1
F873 C6
F874 A6
F875 D13
F876 F6
F877 G6
I801 H2
I802 H2
I803 H3
I804 I2
I805 I2
I806 I2
I813 I12
I814 I12
I820 D7
I821 E7
I822 B7
I823 C7
I828 I6
I831 C2
I833 C2
I840 C3
I841 C3
I842 F3
I843 F3
I844 G6
I845 G6
I846 H8
I847 H9
I848 I8
I850 A10
I851 A11
I852 A11
I853 A12
I854 A12
I855 A13
I856 A13
I857 A13
I858 A11
I861 F2
I862 H9
I863 H3
I864 I7
I865 I7
I866 I7

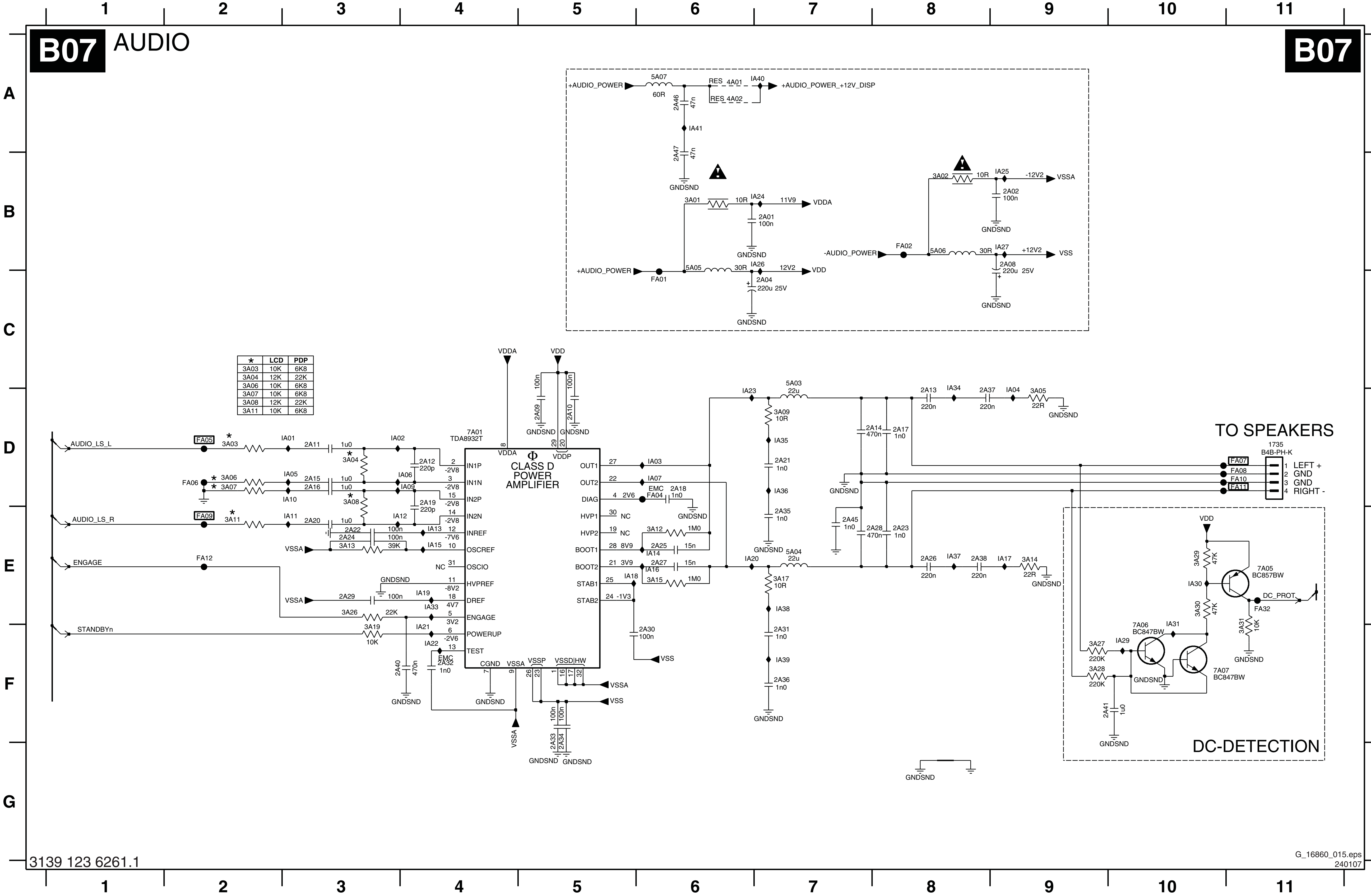
SSB: Headphone Amp & Muting



1900 B7
1901 B2
2901 A4
2902 A2
2903 B5
2904 C2
2905 B4
2906 C5
2907 C3
2908 B5
2909 A7
2910 C7
2911 A7
2912 C7
2913 B5
2940 E2
3901 A3
3902 A4
3903 A6
3904 B6
3905 C3
3906 B3
3907 C3
3908 B4
3909 B6
3910 C6
3911 D2
3912 D4
3913 D4
3914 E4
3915 E4
3916 F4
3917 C4
3918 D4
3934 E3
3935 E2
3937 E1
3938 E2
3940 F3
3942 F5
3943 F6
4901 D3
4902 A7
4903 C7
6914 E2
6916 E3
6919 F4
7901-1 A4
7901-2 B4
7902 D3
7911 C5
7912 D5
7913 D5
7914 E5
7915 E5
7916 F5
7917 E3
7919 E2
7922 F6
F901 B3
F902 B6
F903 C6
F904 C3
F905 D2
F908 A2
F910 B2
I901 A3
I902 B5
I903 C5
I904 B6
I905 C5
I911 D2
I912 D3
I913 E2
I914 E1
I915 E2
I916 E2
I917 E3
I918 E4
I919 D6
I920 E6
I921 E6
I922 F6
I923 F6
I924 B5

Item	EU iTV	non-iTV	US iTV	Description
1901	✔		✔	CON V 4P M 1.00 SM SR R
2901	✔	✔		CER1 0603 NP0 50V 33P COL
2902	✔	✔		CER2 0603 Y5V 10V 470N COL
2903	✔	✔		ELCAP SM 16V 100U PM20 COL R
2904	✔	✔		CER2 0603 Y5V 10V 470N COL
2905	✔	✔		CER1 0603 NP0 50V 33P COL
2906	✔	✔		ELCAP SM 16V 100U PM20 COL R
2907	✔	✔		CER2 0603 Y5V 10V 470N COL
2909	✔			CER2 0603 X7R 50V 10N COL
2910	✔			CER2 0603 X7R 50V 10N COL
2911	✔			CER2 0603 X7R 50V 10N COL
2912	✔			CER2 0603 X7R 50V 10N COL
3901	✔	✔		RST SM 0603 47K PM5 COL
3902	✔	✔		RST SM 0603 RC21 120K PM5 R
3904	✔	✔		RST SM 0603 33R PM5 COL
3905	✔	✔		RST SM 0603 47K PM5 COL
3906	✔	✔		RST SM 0603 100K PM5 COL
3907	✔	✔		RST SM 0603 100K PM5 COL
3908	✔	✔		RST SM 0603 RC21 120K PM5 R
3910	✔	✔		RST SM 0603 33R PM5 COL
3917	✔	✔		RST SM 0603 1K PM5 COL
3918	✔	✔		RST SM 0603 1K PM5 COL
4902		✔		RST SM 0603 JUMP. 0R05 COL
4903		✔		RST SM 0603 JUMP. 0R05 COL
7901	✔	✔		IC SM TS482ID (ST00) R
7911	✔	✔		TRA SIG SM BC847BW (COL) R
7912	✔	✔		TRA SIG SM BC847BW (COL) R

SSB: Audio



*	LCD	PDP
3A03	10K	6K8
3A04	12K	22K
3A06	10K	6K8
3A07	10K	6K8
3A08	12K	22K
3A11	10K	6K8

1735 D11
2A01 B7
2A02 B9
2A04 C7
2A08 B9
2A09 D5
2A10 D5
2A11 D3
2A12 D4
2A13 D8
2A14 D8
2A15 D3
2A16 D3
2A17 D8
2A18 D6
2A19 D4
2A20 E3
2A21 D7
2A22 E3
2A23 E8
2A24 E3
2A25 E6
2A26 E8
2A27 E6
2A28 E8
2A29 E3
2A30 F6
2A31 F7
2A32 F4
2A33 F5
2A34 F5
2A35 E7
2A36 F7
2A37 D8
2A38 E8
2A40 F3
2A41 F9
2A45 E7
2A46 A6
2A47 B6
3A01 B6
3A02 B8
3A03 D2
3A04 D3
3A05 D9
3A06 D2
3A07 D2
3A08 D3
3A09 D7
3A11 E2
3A12 E6
3A13 E3
3A14 E9
3A15 E6
3A17 E7
3A19 F3
3A26 E3
3A27 F9
3A28 F9
3A29 E10
3A30 E10
3A31 F11
4A01 A6
4A02 A6
5A03 C7
5A04 E7
5A05 B6
5A06 B8
5A07 A6
7A01 D4
7A05 E11
7A06 F10
7A07 F10
FA01 C6
FA02 B8
FA04 D6
FA05 D2
FA06 D2
FA07 D11
FA08 D11
FA09 E2
FA10 D11
FA11 D11
FA12 E2
FA32 E11
IA01 D3
IA02 D3
IA03 D6
IA04 D9
IA05 D3
IA06 D4
IA07 D6
IA09 D4
IA10 D3
IA11 E3
IA12 E3
IA13 E4
IA14 E6
IA15 E4
IA16 E6
IA17 E9
IA18 E5
IA19 E4
IA20 E6
IA21 F4
IA22 F4
IA23 D6
IA24 B7
IA25 B9
IA26 B7
IA27 B9
IA29 F10
IA30 E10
IA31 E10
IA33 E4
IA34 C8
IA35 D7
IA36 D7
IA37 E8
IA38 E7
IA39 F7
IA40 A7
IA41 A6

SSB: SRP List

1.1. Introduction

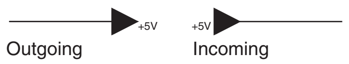
SRP (Service Reference Protocol) is a software tool that creates a list with all references to signal lines. The list contains references to the signals within all schematics of a PWB. It replaces the text references currently printed next to the signal names in the schematics. These printed references are created manually and are therefore not guaranteed to be 100% correct. In addition, in the current crowded schematics there is often none or very little place for these references.
Some of the PWB schematics will use SRP while others will still use the manual references. Either there will be an SRP reference list for a schematic, or there will be printed references in the schematic.

1.2. Non-SRP Schematics

There are several different signals available in a schematic:

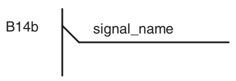
1.2.1. Power Supply Lines

All power supply lines are available in the supply line overview (see chapter 6). In the schematics (see chapter 7) is not indicated where supplies are coming from or going to.
It is however indicated if a supply is incoming (created elsewhere), or outgoing (created or adapted in the current schematic).



1.2.2. Normal Signals

For normal signals, a schematic reference (e.g. B14b) is placed next to the signals.

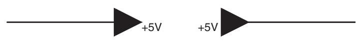


1.2.3. Grounds

For normal and special grounds (e.g. GNDHOT or GND3V3 etc.), nothing is indicated.

1.3. SRP Schematics

SRP is a tool, which automatically creates a list with signal references, indicating on which schematic the signals are used.
A reference is created for all signals indicated with an SRP symbol, these symbols are:



Power supply line.



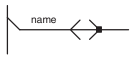
Stand alone signal or switching line (used as less as possible).



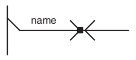
Signal line into a wire tree.



Switching line into a wire tree.



Bi-directional line (e.g. SDA) into a wire tree.



Signal line into a wire tree, its direction depends on the circuit (e.g. ingoing for PDP, outgoing for LCD sets).

Remarks:

- When there is a black dot on the "signal direction arrow" it is an SRP symbol, so there will be a reference to the signal name in the SRP list.
- All references to normal grounds (Ground symbols without additional text) are not listed in the reference list, this to keep it concise.
- Signals that are not used in multiple schematics, but only once or several times in the same schematic, are included in the SRP reference list, but only with one reference.

Additional Tip:

When using the PDF service manual file, you can very easily search for signal names and follow the signal over all the schematics. In Adobe PDF reader:

- Select the signal name you want to search for, with the "Select text" tool.
- Copy and paste the signal name in the "Search PDF" tool.
- Search for all occurrences of the signal name.
- Now you can quickly jump between the different occurrences and follow the signal over all schematics. It is advised to "zoom in" to e.g. 150% to see clearly, which text is selected. Then you can zoom out, to get an overview of the complete schematic.

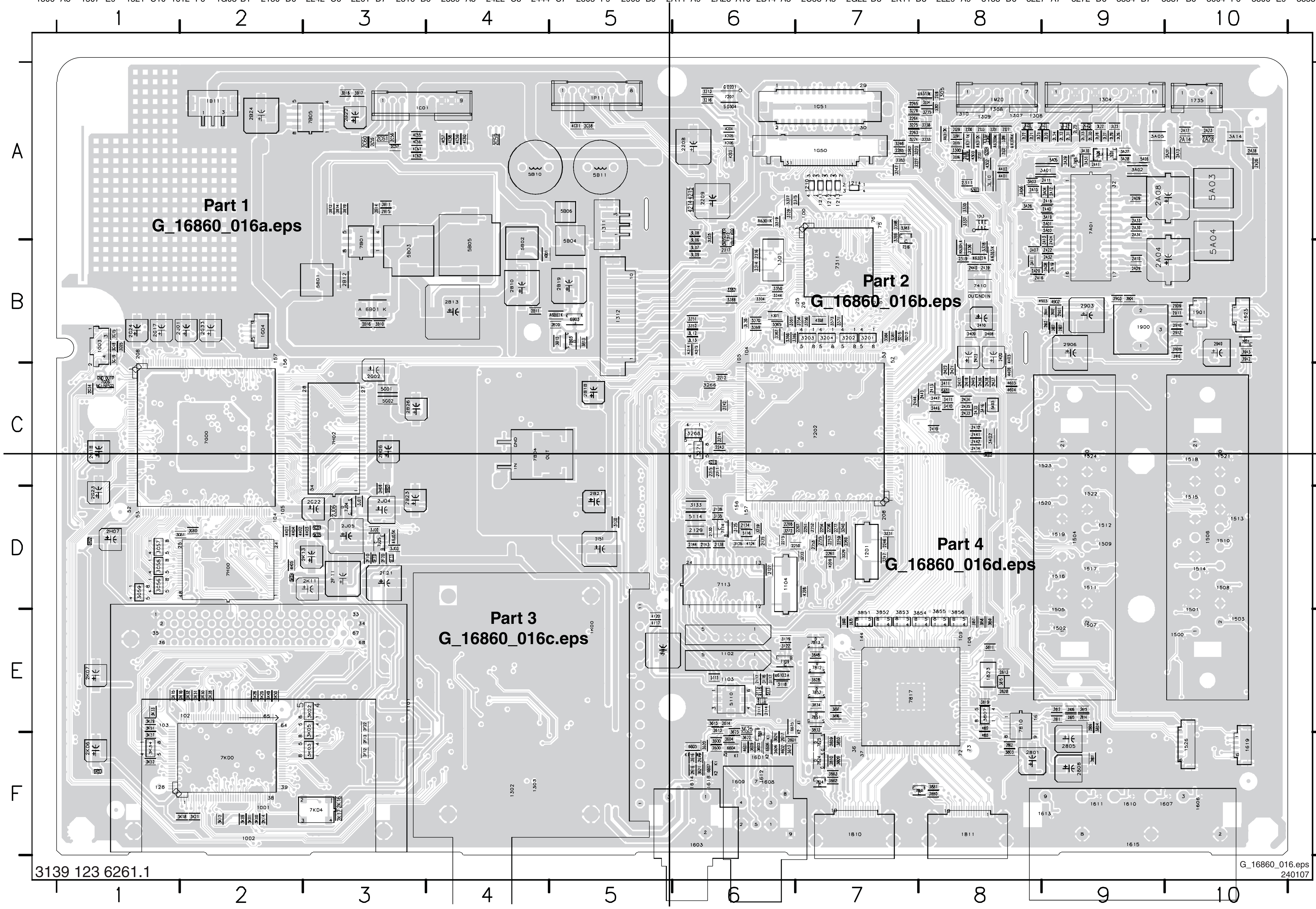
PS. It is recommended to use at least Adobe PDF (reader) version 6.x, due to better search possibilities in this version.

Netname	Schematic
+12V_DISP	B02 (1x)
+12V_DISP	B04A (1x)
+12V_DISP	B04B (1x)
+1V2_MOJO	B02 (1x)
+1V2_MOJO	B03D (2x)
+1V8S_SW	B02 (1x)
+1V8S_SW	B03B (2x)
+1V8S_SW	B03F (1x)
+1V8S_SW	B04B (3x)
+1V8S_SW	B06C (3x)
+3V3	B03B (3x)
+3V3	B03C (3x)
+3V3	B03D (8x)
+3V3	B03E (2x)
+3V3	B03F (1x)
+3V3_BUF	B03C (4x)
+3V3_CORE	B03C (2x)
+3V3_MOJO	B02 (1x)
+3V3_MOJO	B03F (2x)
+3V3_NOR48	B03E (4x)
+3V3_STBY	B02 (1x)
+3V3_STBY	B04A (30x)
+3V3_STBY	B06D (3x)
+3V3_STV	B03C (10x)
+3V3_SW	B02 (1x)
+3V3_SW	B04A (8x)
+3V3_SW	B04B (13x)
+3V3_SW	B06C (19x)
+3V3_VDDP	B03D (3x)
+3V3clean	B03D (1x)
+3V3clean	B03F (1x)
+3V3FE	B03B (5x)
+5V_AUD	B04C (3x)
+5V_D	B04C (2x)
+5V_IF	B03A (4x)
+5V_STANDBY	B02 (4x)
+5V_STANDBY	B04A (4x)
+5V_STANDBY	B04B (2x)
+5V_SW	B02 (6x)
+5V_SW	B03A (4x)
+5V_SW	B03B (9x)
+5V_SW	B03C (2x)
+5V_SW	B03E (3x)
+5V_SW	B04A (1x)
+5V_SW	B04B (2x)
+5V_SW	B04C (2x)
+5V_SW	B06A (2x)
+5V_SW	B06B (2x)
+5V_SW	B06D (1x)
+5VHDMI_A	B06C (3x)
+5VHDMI_B	B06C (3x)
+5VS	B03A (3x)
+8V	B04C (2x)
+AUDIO_POWER	B02 (1x)
+AUDIO_POWER	B04C (1x)
+AUDIO_POWER	B06A (1x)
+AUDIO_POWER	B07 (1x)
+IO_POWER	B06A (10x)
+IO_POWER	B06B (7x)
+VTUN	B02 (1x)
+VTUN	B03A (1x)
+VTUN	B04A (1x)
10046_TDO	B03B (1x)
10046_TDO	B03D (1x)
4MHZ_CLK	B03A (1x)
4MHZ_CLK	B03B (1x)
4MHz_MOJO	B03B (1x)
4MHz_MOJO	B03D (1x)
A(0)	B04A (1x)
A(0)	B04B (1x)
A(0:7)	B04A (1x)
A(0:7)	B04B (1x)
A(1)	B04A (2x)
A(1)	B04B (1x)
A(1:7)	B04A (1x)
A(10)	B04A (2x)
A(11)	B04A (2x)
A(12)	B04A (2x)
A(13)	B04A (2x)
A(14)	B04A (2x)
A(15)	B04A (2x)
A(16)	B04A (2x)
A(17)	B04A (2x)
A(18)	B04A (2x)
A(19)	B04A (2x)
A(2)	B04A (2x)
A(2)	B04B (1x)
A(3)	B04A (2x)
A(3)	B04B (1x)
A(4)	B04A (2x)
A(4)	B04B (1x)
A(5)	B04A (2x)
A(5)	B04B (1x)
A(6)	B04A (2x)
A(6)	B04B (1x)
A(7)	B04A (2x)
A(7)	B04B (1x)
A(8)	B04A (2x)
A(8:19)	B04A (2x)
A(9)	B04A (2x)
A_MICLK	B03C (1x)
A_MISTRT	B03C (1x)
A_MIVAL	B03C (1x)
A_MOCLK	B03C (1x)
A_MOSTRT	B03C (1x)
A_MOVAL	B03C (1x)
AD(0)	B04A (2x)
AD(0)	B04B (1x)
AD(0:7)	B04A (2x)
AD(0:7)	B04B (1x)
AD(1)	B04A (2x)
AD(1)	B04B (1x)
AD(2)	B04A (2x)
AD(2)	B04B (1x)
AD(3)	B04A (2x)
AD(3)	B04B (1x)
AD(4)	B04A (2x)
AD(4)	B04B (1x)
AD(5)	B04A (2x)
AD(5)	B04B (1x)
AD(6)	B04A (2x)
AD(6)	B04B (1x)
AD(7)	B04A (2x)
AD(7)	B04B (1x)
ALE_EMU	B04A (1x)
ALE_EMU	B04B (1x)
ANTI_PLOP	B04A (1x)
ANTI_PLOP	B06D (1x)
AUDIO_LS_L	B04C (1x)
AUDIO_LS_L	B07 (1x)
AUDIO_LS_R	B04C (1x)
AUDIO_LS_R	B07 (1x)
-AUDIO_POWER	B02 (1x)
-AUDIO_POWER	B07 (1x)
BACKLIGHT_BOOST	B02 (1x)
BACKLIGHT_BOOST	B04A (1x)
BL_ADJUST	B02 (1x)
BL_ADJUST	B04A (1x)
BL_ADJUST	B04B (1x)
BL_ON_OFF	B02 (1x)
BL_ON_OFF	B04A (1x)
BOLT_ON_SCL	B04A (2x)
BOLT_ON_SDA	B04A (2x)
CE	B04A (1x)
COMP_AUDIO_IN_L	B04C (1x)
COMP_AUDIO_IN_L	B06A (1x)
COMP_AUDIO_IN_R	B04C (1x)
COMP_AUDIO_IN_R	B06A (1x)
CPU_RST	B04A (1x)
CS	B04A (1x)
CS	B04B (1x)
CTRL_DISP1	B04B (2x)
CTRL_DISP1_up	B04A (1x)
CTRL_DISP1_up	B04B (1x)
CTRL_DISP2	B04B (2x)
CTRL_DISP3	B04B (2x)
CTRL_DISP4	B04B (2x)
CTRL_DISP4_up	B04A (1x)
CTRL_DISP4_up	B04B (1x)
CVBS_RF	B03A (1x)
CVBS_RF	B04B (1x)
CX_AVDD_ADC1	B04B (2x)
CX_AVDD_ADC2	B04B (2x)
CX_AVDD_ADC3	B04B (2x)
CX_AVDD_ADC4	B04B (2x)
CX_AVDD3_ADC1	B04B (2x)
CX_AVDD3_ADC2	B04B (2x)
CX_AVDD3_BG_ASS	B04B (2x)
CX_AVDD3_OUTBUF	B04B (2x)
CX_PAVDD	B04B (2x)
CX_PAVDD1	B04B (2x)
CX_PAVDD2	B04B (2x)
CX_PDVDD	B04B (2x)
DC_PROT	B04A (1x)
DC_PROT	B07 (1x)
DDC_RESET	B04A (1x)
DDC_RESET	B06C (2x)
DVB_SW	B03A (1x)
DVB_SW	B04A (1x)
E_PAGE	B04A (1x)
ENGAGE	B06D (1x)
ENGAGE	B07 (1x)
FE_LOCK	B03B (1x)
FE_LOCK	B03D (1x)
FRONT_C_IN	B04B (1x)
FRONT_C_IN	B06A (1x)
FRONT_Y_CVBS_IN	B04B (1x)
FRONT_Y_CVBS_IN	B06A (1x)
GNDDC	B02 (1x)
GNDSND	B02 (3x)
GNDSND	B07 (21x)
GNDTUN	B02 (1x)
HD_PB_IN	B04B (1x)
HD_PB_IN	B06A (2x)
HD_PR_IN	B04B (1x)
HD_PR_IN	B06A (2x)
HD_Y_IN	B04B (1x)
HD_Y_IN	B06A (2x)
HDMI_AUDIO_IN_L	B04C (1x)
HDMI_AUDIO_IN_L	B06C (1x)
HDMI_AUDIO_IN_R	B04C (1x)
HDMI_AUDIO_IN_R	B06C (1x)
HDMI_Cb(0)	B04B (1x)
HDMI_Cb(0)	B06C (1x)
HDMI_Cb(0:7)	B04B (1x)
HDMI_Cb(0:7)	B06C (1x)
HDMI_Cb(1)	B04B (1x)
HDMI_Cb(1)	B06C (1x)
HDMI_Cb(2)	B04B (1x)
HDMI_Cb(2)	B06C (1x)
HDMI_Cb(3)	B04B (1x)
HDMI_Cb(3)	B06C (1x)
HDMI_Cb(4)	B04B (1x)
HDMI_Cb(4)	B06C (1x)
HDMI_Cb(5)	B04B (1x)
HDMI_Cb(5)	B06C (1x)
HDMI_Cb(6)	B04B (1x)
HDMI_Cb(6)	B06C (1x)
HDMI_Cb(7)	B04B (1x)
HDMI_Cb(7)	B06C (1x)
HDMI_Cr(0)	B04B (1x)
HDMI_Cr(0)	B06C (1x)
HDMI_Cr(0:7)	B04B (1x)
HDMI_Cr(0:7)	B06C (1x)
HDMI_Cr(1)	B04B (1x)
HDMI_Cr(1)	B06C (1x)
HDMI_Cr(2)	B04B (1x)
HDMI_Cr(2)	B06C (1x)
HDMI_Cr(3)	B04B (1x)
HDMI_Cr(3)	B06C (1x)
HDMI_Cr(4)	B04B (1x)
HDMI_Cr(4)	B06C (1x)
HDMI_Cr(5)	B04B (1x)
HDMI_Cr(5)	B06C (1x)
HDMI_Cr(6)	B04B (1x)
HDMI_Cr(6)	B06C (1x)
HDMI_Cr(7)	B04B (1x)
HDMI_Cr(7)	B06C (1x)
HDMI_DE	B04B (1x)
HDMI_DE	B06C (1x)
HDMI_H	B04B (1x)
HDMI_H	B06C (1x)
HDMI_HOTPLUG_RESET	B04A (1x)
HDMI_HOTPLUG_RESET	B06C (2x)
HDMI_INT	B04A (1x)
HDMI_INT	B06C (1x)
HDMI_V	B04B (1x)
HDMI_V	B06C (1x)
HDMI_VCLK	B04B (1x)
HDMI_VCLK	B06C (1x)
HDMI_Y(0)	B04B (1x)
HDMI_Y(0)	B06C (1x)
HDMI_Y(0:7)	B04B (1x)
HDMI_Y(0:7)	B06C (1x)
HDMI_Y(1)	B04B (1x)
HDMI_Y(1)	B06C (1x)
HDMI_Y(2)	B04B (1x)
HDMI_Y(2)	B06C (1x)
HDMI_Y(3)	B04B (1x)
HDMI_Y(3)	B06C (1x)
HDMI_Y(4)	B04B (1x)
HDMI_Y(4)	B06C (1x)
HDMI_Y(5)	B04B (1x)
HDMI_Y(5)	B06C (1x)
HDMI_Y(6)	B04B (1x)
HDMI_Y(6)	B06C (1x)
HDMI_Y(7)	B04B (1x)
HDMI_Y(7)	B06C (1x)
HP_AUDIO_OUT_L	B04C (1x)
HP_AUDIO_OUT_L	B06D (1x)
HP_AUDIO_OUT_R	B04C (1x)
HP_AUDIO_OUT_R	B06D (1x)
I2C_LOCAL_SCL	B03B (1x)
I2C_LOCAL_SCL	B03C (1x)
I2C_LOCAL_SCL	B03D (1x)
I2C_LOCAL_SCL	B03E (1x)
I2C_LOCAL_SDA	B03B (1x)
I2C_LOCAL_SDA	B03C (1x)
I2C_LOCAL_SDA	B03D (1x)
I2C_LOCAL_SDA	B03E (1x)
I2C_TDA_SCL	B03A (1x)
I2C_TDA_SCL	B03B (1x)
I2C_TDA_SDA	B03A (1x)
I2C_TDA_SDA	B03B (1x)
IBO_B_IN	B03F (1x)
IBO_B_IN	B04B (1x)
IBO_CVBS_IN	B03F (1x)
IBO_CVBS_IN	B04B (1x)
IBO_G_IN	B03F (1x)
IBO_G_IN	B04B (1x)
IBO_IRQ	B03D (1x)
IBO_IRQ	B04A (1x)
IBO_R_IN	B03F (1x)
IBO_R_IN	B04B (1x)
IF_AGC_IBO	B03A (1x)
IF_AGC_IBO	B03B (1x)
IF_ATV	B03A (2x)
IIC_SCL	B03A (2x)
IIC_SCL	B03D (1x)
IIC_SCL	B04A (1x)
IIC_SCL	B04B (2x)
IIC_SCL	B04C (1x)
IIC_SCL	B06C (1x)
IIC_SCL_up	B04A (2x)
IIC_SDA	B03A (2x)
IIC_SDA	B03D (1x)
IIC_SDA	B04A (1x)
IIC_SDA	B04B (2x)
IIC_SDA	B04C (1x)
IIC_SDA	B06C (1x)
IIC_SDA_up	B04A (2x)
INT	B04A (1x)
INT	B04B (1x)
ISP	B04A (1x)
ITV_SPI_CLK	B04A (2x)
ITV_SPI_DATA_IN	B04A (2x)
JTAG_TCK	B03B (1x)
JTAG_TCK	B03C (1x)
JTAG_TCK	B03D (1x)
JTAG_TMS	B03B (1x)
JTAG_TMS	B03C (1x)
JTAG_TMS	B03D (1x)
JTAG_TRST	B03B (1x)
JTAG_TRST	B03C (1x)
JTAG_TRST	B03D (1x)
KEYB	B04A (2x)
LCD_PWR_ON	B04A (1x)
LCD_PWR_ON	B04B (1x)
LED1	B04A (2x)
LED2	B04A (2x)
LIGHT_SENSOR	B04A (2x)
MIU_ADDR(0)	B03C (1x)
MIU_ADDR(0)	B03D (1x)
MIU_ADDR(0:24)	B03D (1x)
MIU_ADDR(1)	B03C (1x)
MIU_ADDR(1)	B03D (1x)
MIU_ADDR(1)	B03E (1x)
MIU_ADDR(10)	B03C (1x)
MIU_ADDR(10)	B03D (1x)
MIU_ADDR(10)	B03E (1x)
MIU_ADDR(11)	B03C (1x)
MIU_ADDR(11)	B03D (1x)
MIU_ADDR(11)	B03E (1x)
MIU_ADDR(12)	B03C (1x)
MIU_ADDR(12)	B03D (1x)
MIU_ADDR(12)	B03E (1x)
MIU_ADDR(13)	B03C (1x)
MIU_ADDR(13)	B03D (1x)
MIU_ADDR(13)	B03E (1x)
MIU_ADDR(14)	B03C (1x)
MIU_ADDR(14)	B03D (1x)
MIU_ADDR(14)	B03E (1x)
MIU_ADDR(15)	B03C (1x)
MIU_ADDR(15)	B03D (1x)
MIU_ADDR(15)	B03E (1x)
MIU_ADDR(16)	B03C (1x)
MIU_ADDR(16)	B03D (1x)
MIU_ADDR(16)	B03E (1x)
MIU_ADDR(17)	B03C (1x)
MIU_ADDR(17)	B03D (1x)
MIU_ADDR(17)	B03E (1x)
MIU_ADDR(18)	B03C (1x)
MIU_ADDR(18)	B03D (1x)
MIU_ADDR(18)	B03E (1x)
MIU_ADDR(19)	B03C (1x)
MIU_ADDR(19)	B03D (1x)
MIU_ADDR(19)	B03E (1x)
MIU_ADDR(2)	B03C (1x)
MIU_ADDR(2)	B03D (1x)
MIU_ADDR(2)	B03E (1x)
MIU_ADDR(20)	B03C (1x)
MIU_ADDR(20)	B03D (1x)
MIU_ADDR(20)	B03E (1x)
MIU_ADDR(21)	B03C (1x)
MIU_ADDR(21)	B03D (1x)
MIU_ADDR(21)	B03E (1x)
MIU_ADDR(22)	B03C (1x)
MIU_ADDR(22)	B03D (1x)
MIU_ADDR(22)	B03E (1x)
MIU_ADDR(23)	B03C (1x)
MIU_ADDR(23)	B03D (1x)
MIU_ADDR(24)	B03C (1x)
MIU_ADDR(24)	B03D (1x)
MIU_ADDR(3)	B03C (1x)
MIU_ADDR(3)	B03D (1x)
MIU_ADDR(3)	B03E (1x)
MIU_ADDR(4)	B03C (1x)
MIU_ADDR(4)	B03D (1x)
MIU_ADDR(4)	B03E (1x)
MIU_ADDR(5)	B03C (1x)
MIU_ADDR(5)	B03D (1x)
MIU_ADDR(5)	B03E (1x)
MIU_ADDR(6)	B03C (1x)
MIU_ADDR(6)	B03D (1x)
MIU_ADDR(6)	B03E (1x)
MIU_ADDR(7)	B03C (1x)
MIU_ADDR(7)	B03D (1x)
MIU_ADDR(7)	B03E (1x)
MIU_ADDR(8)	B03C (1x)
MIU_ADDR(8)	B03D (1x)
MIU_ADDR(8)	B03E (1x)
MIU_ADDR(9)	B03C (1x)
MIU_ADDR(9)	B03D (1x)
MIU_ADDR(9)	B03E (1x)
MIU_DATA(0)	B03C (1x)
MIU_DATA(0)	B03D (1x)
MIU_DATA(0)	B03E (1x)
MIU_DATA(0:15)	B03D (1x)
MIU_DATA(0:15)	B03E (1x)
MIU_DATA(1)	B03C (1x)
MIU_DATA(1)	B03D (1x)
MIU_DATA(1)	B03E (1x)
MIU_DATA(10)	B03D (1x)
MIU_DATA(10)	B03E (1x)
MIU_DATA(11)	B03D (1x)
MIU_DATA(11)	B03E (1x)
MIU_DATA(12)	B03D (1x)
MIU_DATA(12)	B03E (1x)
MIU_DATA(13)	B03D (1x)
MIU_DATA(13)	B03E (1x)
MIU_DATA(14)	B03D (1x)
MIU_DATA(14)	B03E (1x)
MIU_DATA(15)	B03D (1x)
MIU_DATA(15)	B03E (1x)
MIU_DATA(2)	B03C (1x)
MIU_DATA(2)	B03D (1x)
MIU_DATA(2)	B03E (1x)
MIU_DATA(3)	B03C (1x)
MIU_DATA(3)	B03D (1x)
MIU_DATA(3)	B03E (1x)
MIU_DATA(4)	B03C (1x)
MIU_DATA(4)	B03D (1x)
MIU_DATA(4)	B03E (1x)
MIU_DATA(5)	B03C (1x)
MIU_DATA(5)	B03D (1x)
MIU_DATA(5)	B03E (1x)
MIU_DATA(6)	B03C (1x)
MIU_DATA(6)	B03D (1x)
MIU_DATA(6)	B03E (1x)
MIU_DATA(7)	B03C (1x)
MIU_DATA(7)	B03D (1x)
MIU_DATA(7)	B03E (1x)
MIU_DATA(8)	B03D (1x)
MIU_DATA(8)	B03E (1x)
MIU_DATA(9)	B03D (1x)
MIU_DATA(9)	B03E (1x)
MIU_OEN	B03C (1x)
MIU_OEN	B03D (1x)
MIU_OEN	B03E (1x)
MIU_RDY	B03C (1x)
MIU_RDY	B03D (1x)
MIU_WEN	B03C (1x)
MIU_WEN	B03D (1x)
MIU_WEN	B03E (1x)
MOJO_I2S_OUT_SCK	B03D (1x)
MOJO_I2S_OUT_SCK	B04C (1x)
MOJO_I2S_OUT_SD	B03D (1x)
MOJO_I2S_OUT_SD	B04C (1x)
MOJO_I2S_OUT_WS	B03D (1x)
MOJO_I2S_OUT_WS	B04C (1x)
MUTEn	B04A (1x)
MUTEn	B06D (1x)
NOR_CS	B03D (1x)
NOR_CS	B03E (1x)
NOR_RYBY	B03D (1x)
NOR_RYBY	B03E (1x)
NOR_WP	B03D (1x)
NOR_WP	B03E (1x)
PCMCIA_5V	B03C (4x)
PCMCIA_AVCC	B03C (3x)
PCMCIA_VPP	B03C (3x)
POWER_DOWN	B02 (1x)
POWER_DOWN	B04A (1x)
POWER_DOWN	B06D (1x)
RD	B04A (1x)
RD	B04B (1x)
REMOTE	B04A (3x)
RESET_FE_n	B03B (1x)
RESET_FE_n	B03D (1x)
RESET_n	B03D (1x)
RESET_n	B03E (1x)
RESET_STV	B03C (1x)
RESET_STV	B03D (1x)
RF_AGC	B03A (2x)
RF_AGC_IBO	B03A (1x)
RF_AGC_IBO	B03B (1x)
RST	B04A (1x)
RST	B06C (1x)
RST_AUD	B04A (1x)
RST_AUD	B04C (1x)
RST_H	B04A (1x)
RST_H	B04B (1x)
RXD0	B03D (1x)
RXD0	B03F (1x)
SAW_SW	B03A (1x)
SAW_SW	B04A (1x)
SC1_AUDIO_IN_L	B04C (1x)
SC1_AUDIO_IN_L	B06B (1x)
SC1_AUDIO_IN_R	B04C (1x)
SC1_AUDIO_IN_R	B06B (1x)
SC1_AUDIO_MUTE_L	B06B (1x)
SC1_AUDIO_MUTE_L	B06D (1x)
SC1_AUDIO_MUTE_R	B06B (1x)
SC1_AUDIO_MUTE_R	B06D (1x)
SC1_AUDIO_OUT_L	B04C (1x)
SC1_AUDIO_OUT_L	B06B (2x)
SC1_AUDIO_OUT_R	B04C (1x)
SC1_AUDIO_OUT_R	B06B (2x)
SC1_B_IN	B04B (1x)
SC1_B_IN	B06B (2x)
SC1_CVBS_IN	B04B (1x)
SC1_CVBS_IN	B06B (1x)
SC1_CVBS_RF_OUT	B04A (1x)
SC1_CVBS_RF_OUT	B06B (1x)
SC1_FBL_IN	B04B (1x)
SC1_FBL_IN	B06B (2x)
SC1_G_IN	B04B (1x)
SC1_G_IN	B06B (2x)
SC1_R_IN	B04B (1x)
SC1_R_IN	B06B (2x)
SC1_RF_OUT_CVBS	B04B (1x)
SC1_RF_OUT_CVBS	B06B (1x)
SC1_STATUS	B04A (1x)
SC1_STATUS	B06B (1x)
SC2_AUDIO_IN_L	B04C (1x)
SC2_AUDIO_IN_L	B06B (2x)
SC2_AUDIO_IN_R	B04C (1x)
SC2_AUDIO_IN_R	B06B (2x)
SC2_AUDIO_MUTE_L	B06B (1x)
SC2_AUDIO_MUTE_L	B06D (1x)
SC2_AUDIO_MUTE_R	B06B (1x)
SC2_AUDIO_MUTE_R	B06D (1x)
SC2_AUDIO_OUT_L	B04C (1x)
SC2_AUDIO_OUT_L	B06B (1x)
SC2_AUDIO_OUT_R	B04C (1x)
SC2_AUDIO_OUT_R	B06B (1x)
SC2_C_IN	B04B (1x)
SC2_C_IN	B06B (2x)
SC2_CVBS_MON_OUT	B04B (1x)
SC2_CVBS_MON_OUT	B06B (1x)
SC2_CVBS_MON_OUT	B06D (1x)
SC2_STATUS	B04A (1x)
SC2_STATUS	B06B (1x)
SC2_Y_CVBS_IN	B04B (1x)
SC2_Y_CVBS_IN	B06B (2x)
SDRAM_ADDR(0)	B03D (1x)
SDRAM_ADDR(0)	B03E (1x)
SDRAM_ADDR(0:14)	B03D (1x)
SDRAM_ADDR(1)	B03D (1x)
SDRAM_ADDR(1)	B03E (1x)
SDRAM_ADDR(10)	B03D (1x)
SDRAM_ADDR(10)	B03E (1x)
SDRAM_ADDR(11)	B03D (1x)
SDRAM_ADDR(11)	B03E (1x)
SDRAM_ADDR(12)	B03D (1x)
SDRAM_ADDR(12)	B03E (1x)
SDRAM_ADDR(13)	B03D (1x)
SDRAM_ADDR(13)	B03E (1x)
SDRAM_ADDR(14)	B03D (1x)
SDRAM_ADDR(14)	B03E (1x)
SDRAM_ADDR(2)	B03D (1x)
SDRAM_ADDR(2)	B03E (1x)
SDRAM_ADDR(3)	B03D (1x)
SDRAM_ADDR(3)	B03E (1x)
SDRAM_ADDR(4)	B03D (1x)
SDRAM_ADDR(4)	B03E (1x)
SDRAM_ADDR(5)	B03D (1x)
SDRAM_ADDR(5)	B03E (1x)
SDRAM_ADDR(6)	B03D (1x)
SDRAM_ADDR(6)	B03E (1x)
SDRAM_ADDR(7)	B03D (1x)
SDRAM_ADDR(7)	B03E (1x)
SDRAM_ADDR(8)	B03D (1x)
SDRAM_ADDR(8)	B03E (1x)
SDRAM_ADDR(9)	B03D (1x)
SDRAM_ADDR(9)	B03E (1x)
SDRAM_CAS	B03D (1x)
SDRAM_CAS	B03E (1x)
SDRAM_CKE	B03D (1x)
SDRAM_CKE	B03E (1x)
SDRAM_CLK	B03D (1x)
SDRAM_CLK	B03E (1x)
SDRAM_DATA(0)	B03D (1x)
SDRAM_DATA(0)	B03E (1x)
SDRAM_DATA(0:15)	B03D (1x)
SDRAM_DATA(1)	B03D (1x)
SDRAM_DATA(1)	B03E (1x)
SDRAM_DATA(10)	B03D (1x)
SDRAM_DATA(10)	B03E (1x)
SDRAM_DATA(11)	B03D (1x)
SDRAM_DATA(11)	B03E (1x)
SDRAM_DATA(12)	B03D (1x)
SDRAM_DATA(12)	B03E (1x)
SDRAM_DATA(13)	B03D (1x)
SDRAM_DATA(13)	B03E (1x)
SDRAM_DATA(14)	B03D (1x)
SDRAM_DATA(14)	B03E (1x)
SDRAM_DATA(15)	B03D (1x)
SDRAM_DATA(15)	B03E (1x)
SDRAM_DATA(2)	B03D (1x)
SDRAM_DATA(2)	B03E (1x)
SDRAM_DATA(3)	B03D (1x)
SDRAM_DATA(3)	B03E (1x)
SDRAM_DATA(4)	B03D (1x)
SDRAM_DATA(4)	B03E (1x)
SDRAM_DATA(5)	B03D (1x)
SDRAM_DATA(5)	B03E (1x)
SDRAM_DATA(6)	B03D (1x)
SDRAM_DATA(6)	B03E (1x)
SDRAM_DATA(7)	B03D (1x)
SDRAM_DATA(7)	B03E (1x)
SDRAM_DATA(8)	B03D (1x)
SDRAM_DATA(8)	B03E (1x)
SDRAM_DATA(9)	B03D (1x)
SDRAM_DATA(9)	B03E (1x)
SDRAM_DQM0	B03D (1x)
SDRAM_DQM0	B03E (1x)
SDRAM_DQM1	B03D (1x)
SDRAM_DQM1	B03E (1x)
SDRAM_RAS	B03D (1x)
SDRAM_RAS	B03E (1x)
SDRAM_WE	B03D (1x)
SDRAM_WE	B03E (1x)
SIDE_AUDIO_IN_L	B04C (1x)
SIDE_AUDIO_IN_L	B06A (1x)
SIDE_AUDIO_IN_R	B04C (1x)
SIDE_AUDIO_IN_R	B06A (1x)
SIF	B03A (1x)
SIF	B04C (1x)
SIF1	B03A (2x)
SIF2	B03A (2x)
STANDBY	B02 (2x)
STANDBY	B04A (2x)
STANDBY	B06D (1x)
STANDBYn	B04A (1x)
STANDBYn	B04B (1x)
STANDBYn	B07 (1x)
STV_A25	B03C (1x)
STV_A25	B03D (1x)
STV_CS	B03C (1x)
STV_CS	B03D (1x)
STV_INT	B03C (1x)
STV_INT	B03D (1x)
STV_TDO	B03B (1x)
STV_TDO	B03C (1x)
TDA_CLK	B03B (1x)
TDA_CLK	B03C (1x)
TDA_DAT(0)	B03B (1x)
TDA_DAT(0)	B03C (1x)
TDA_DAT(0:7)	B03B (1x)
TDA_DAT(1)	B03B (1x)
TDA_DAT(1)	B03C (1x)
TDA_DAT(2)	B03B (1x)
TDA_DAT(2)	B03C (1x)
TDA_DAT(3)	B03B (1x)
TDA_DAT(3)	B03C (1x)
TDA_DAT(4)	B03B (1x)
TDA_DAT(4)	B03C (1x)
TDA_DAT(5)	B03B (1x)
TDA_DAT(5)	B03C (1x)
TDA_DAT(6)	B03B (1x)
TDA_DAT(6)	B03C (1x)
TDA_DAT(7)	B03B (1x)
TDA_DAT(7)	B03C (1x)
TDA_SYNC	B03B (1x)
TDA_SYNC	B03C (1x)
TDA_VALID	B03B (1x)
TDA_VALID	B03C (1x)
TS_CLK	B03C (1x)
TS_CLK	B03D (1x)
TS_DATA(0)	B03C (1x)
TS_DATA(0)	B03D (1x)
TS_DATA(0:7)	B03D (1x)
TS_DATA(1)	B03C (1x)
TS_DATA(1)	B03D (1x)
TS_DATA(2)	B03C (1x)
TS_DATA(2)	B03D (1x)
TS_DATA(3)	B03C (1x)
TS_DATA(3)	B03D (1x)
TS_DATA(4)	B03C (1x)
TS_DATA(4)	B03D (1x)
TS_DATA(5)	B03C (1x)
TS_DATA(5)	B03D (1x)
TS_DATA(6)	B03C (1x)
TS_DATA(6)	B03D (1x)
TS_DATA(7)	B03C (1x)
TS_DATA(7)	B03D (1x)
TS_SYNC	B03C (1x)
TS_SYNC	B03D (1x)
TS_VALID	B03C (1x)
TS_VALID	B03D (1x)
TXAn	B04B (2x)
TXAp	B04B (2x)
TXBn	B04B (2x)
TXBp	B04B (2x)
TXCLKn	B04B (2x)
TXCLKp	B04B (2x)
TXCn	B04B (2x)
TXCp	B04B (2x)
TXD0	B03D (1x)
TXD0	B03F (1x)
TXDn	B04B (2x)
TXDp	B04B (2x)
user_EEPROM_WP	B03D (1x)
user_EEPROM_WP	B03E (1x)
VCCEN	B03C (1x)
VDD	B07 (3x)
VDDA	B07 (2x)
VDISP	B04B (2x)
VGA_H	B04B (1x)
VGA_H	B06A (1x)
VGA_V	B04B (1x)
VGA_V	B06A (1x)
VIF1	B03A (2x)
VIF2	B03A (2x)
VIM_IBO	B03A (1x)
VIM_IBO	B03B (1x)
VIP_IBO	B03A (1x)
VIP_IBO	B03B (1x)
VSS	B07 (3x)
VSSA	B07 (5x)
WR	B04A (1x)
WR	B04B (1x)

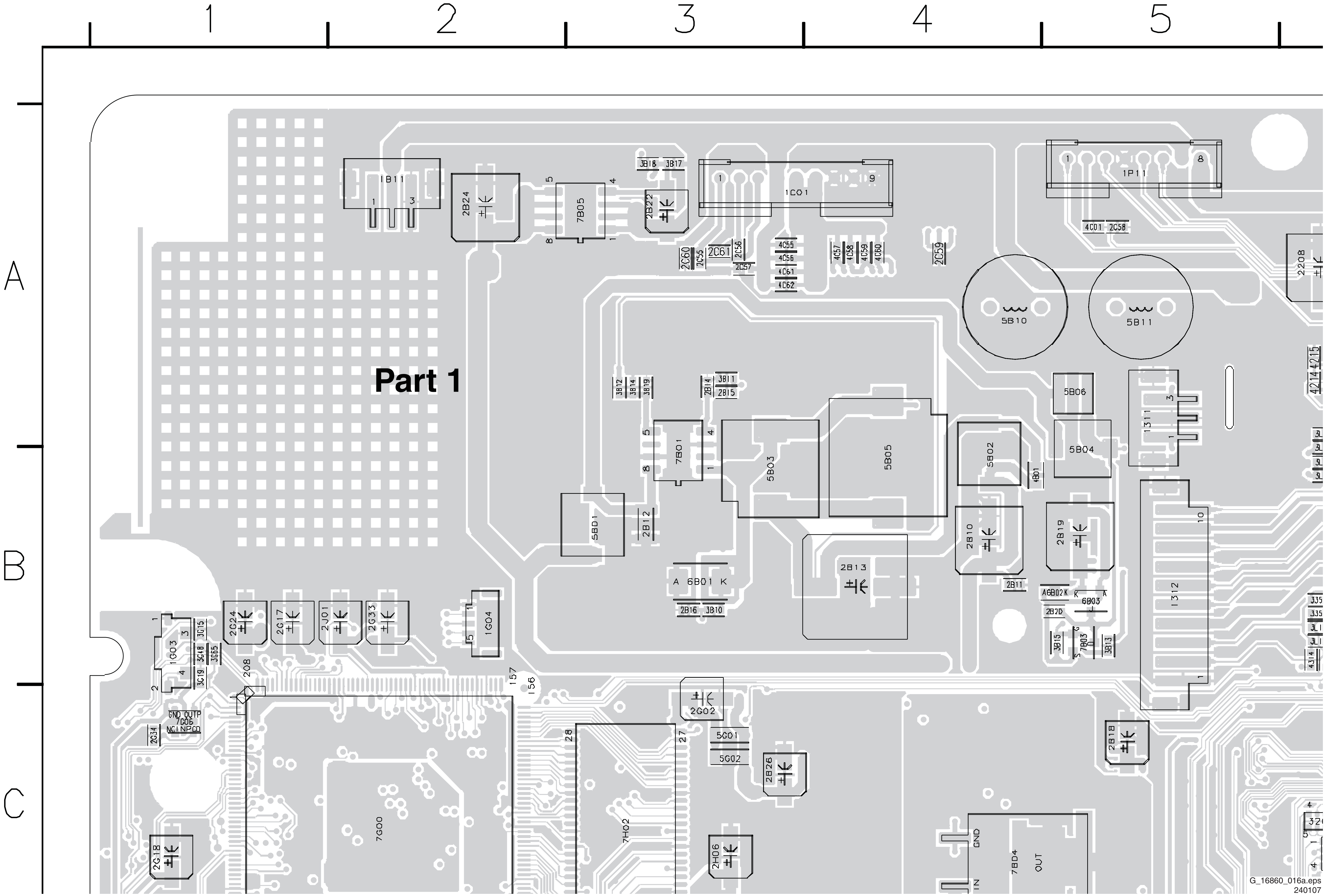
G_16860_026.eps
250107

Layout Small Signal Board (Overview Top Side)

1101	E3
1102	E6
1103	E6
1104	D6
1201	D7
1210	A7
1211	A7
1212	A7
1213	A7
1214	A7
1301	B6
1304	A9
1305	A8
1306	A8
1307	A8
1308	A8
1309	A8
1310	A8
1311	A5
1312	B5
1500	E10
1501	E10
1502	E9
1503	E10
1504	D9
1505	E9
1506	D10
1507	E9
1508	D10
1509	D9
1510	D10
1511	D9
1512	D9
1513	D10
1514	D10
1515	D10
1516	D9
1517	D9
1518	C10
1519	D9
1520	D9
1521	C10
1522	D9
1523	C9
1524	C9
1525	B10
1526	F10
1601	F6
1603	F6
1606	F10
1607	F10
1608	F6
1609	F6
1610	F9
1611	F9
1612	F6
1613	F9
1614	F6
1615	F9
1618	F6
1619	F10
1735	A10
1810	F7
1811	F8
1823	E8
1900	B9
1901	B10
1B11	A2
1C01	A3
1G03	B1
1G04	B2
1G50	A7
1G51	A7
1K00	E5
1M20	A8
1P11	A5
2110	E6
2111	E6
2114	E6
2117	E6
2127	D6
2128	D6
2129	D6
2130	D6
2134	D6
2135	D6
2138	D6
2142	E5
2143	D6
2144	D6
2151	D5
2208	A6
2209	A6
2211	C6
2212	C6
2214	C6
2215	C6
2242	C6
2243	C6
2246	D7
2247	D7
2250	D7
2251	D7
2252	D7
2253	D7
2254	D7
2255	D7
2256	D7
2257	D7
2259	D7
2260	D7
2261	D7
2262	A7
2263	A7
2264	A7
2265	A7
2267	D7
2268	D6
2273	D6
2277	D7
2283	A7
2285	A7
2311	A8
2314	B6
2315	A6
2316	B6
2317	B6
2319	B8
2327	A8
2328	A8
2329	A8
2330	A8
2331	A8
2332	A8
2333	A8
2334	A8
2335	A8
2336	A8
2337	A8
2339	A8
2340	A8
2408	B8
2409	B8
2410	B8
2411	C8
2412	C8
2413	C8
2414	C8
2417	C8
2418	C8
2419	C8
2420	B8
2421	C8
2422	C8
2423	B8
2432	C8
2433	C8
2434	C8
2435	C8
2436	C8
2437	C8
2438	C8
2439	B8
2440	B8
2441	C8
2442	C8
2443	C8
2444	C7
2445	C8
2446	C8
2447	C8
2600	F6
2601	F6
2609	F6
2613	E6
2614	E6
2615	F6
2616	F6
2617	F6
2801	F8
2802	F8
2805	F9
2806	E9
2807	F9
2808	F9
2809	F7
2810	F7
2811	E9
2812	E9
2813	E8
2814	E9
2815	E9
2828	E8
2901	B9
2902	B9
2903	B9
2906	B9
2907	B9
2909	B10
2910	B10
2911	B10
2912	B10
2940	B10
2A01	A9
2A02	A9
2A04	B9
2A08	A9
2A09	A9
2A10	B9
2A11	A9
2A12	A9
2A13	A10
2A14	A10
2A15	A8
2A16	B8
2A17	A10
2A18	A9
2A19	B9
2A20	B8
2A22	B9
2A23	A10
2A24	B9
2A26	A10
2A28	A10
2A29	B9
2A30	A9
2A32	B9
2A33	A9
2A34	A9
2A37	A10
2A38	A10
2A40	A9
2A41	A9
2B10	B4
2B11	B4
2B12	B3
2B13	B4
2B14	A3
2B15	A3
2B16	B3
2B18	C5
2B19	B5
2B20	B5
2B21	D5
2B22	A3
2B23	D3
2B24	A2
2B26	C3
2C55	A3
2C56	A3
2C57	A3
2C58	A5
2C59	A4
2C60	A3
2C61	A3
2F10	D3
2F11	D3
2F12	F3
2F13	F3
2F20	D3
2F21	D3
2F22	E3
2G02	C3
2G17	B1
2G18	C1
2G22	D3
2G23	D1
2G24	B1
2G33	B2
2G34	C1
2H06	C3
2H07	D1
2H08	D3
2J01	B1
2J04	D3
2J05	D3
2J06	D3
2K06	F1
2K07	E1
2K11	D3
2K13	D3
2K14	F2
2K16	F3
2K17	F3
2L20	A9
2L21	A8
2L22	A8
2L23	A8
2L24	A9
2L25	A9
2L26	A9
2L27	A9
2L28	A9
2L29	A9
2L30	A9
2L31	A9
2L32	A9
2L33	A9
3113	E6
3116	E6
3117	E6
3118	E6
3119	E6
3122	E6
3125	D6
3126	D6
3130	D5
3133	D6
3135	D6
3201	B7
3202	B7
3203	B7
3204	B7
3212	B7
3213	A6
3215	B7
3216	A6
3223	A7
3224	A7
3225	A7
3226	A7
3227	A7
3229	D7
3231	D7
3232	D7
3233	A8
3235	A8
3238	A8
3239	D6
3240	D7
3246	A7
3247	A7
3266	C6
3268	C6
3271	C6
3272	D6
3304	B6
3319	A6
3325	A6
3327	A6
3328	B8
3329	A6
3330	A8
3336	B8
3337	A8
3344	B6
3350	B6
3351	B6
3352	B6
3354	B7
3356	B7
3361	B6
3365	B6
3366	B6
3367	B6
3369	B6
3370	B6
3371	B7
3373	B7
3381	B7
3383	A7
3384	B7
3386	B6
3387	B6
3388	B6
3389	A8
3390	A8
3391	A8
3392	A8
3398	A7
3399	A7
3402	C8
3410	C8
3411	C8
3416	C8
3600	F6
3602	F6
3604	F6
3609	F6
3613	F6
3615	E6
3616	F6
3620	F6
3621	F6
3622	F6
3623	E6
3624	F6
3625	E6
3803	F8
3804	E9
3805	E9
3806	E9
3807	E8
3809	F7
3811	E8
3815	E8
3819	E8
3828	E7
3833	E7
3834	E7
3835	E7
3846	E7
3850	F7
3851	E7
3852	E7
3853	E7
3854	E8
3855	E8
3856	E8
3857	E8
3858	E8
3859	E8
3860	E7
3862	F7
3863	F7
3880	F8
3881	F8
3896	E7
3897	E7
3901	B9
3902	B9
3903	B9
3904	B9
3907	B9
3909	B10
3910	B10
3942	B10
3943	B10
3A01	A9
3A02	A9
3A03	A8
3A04	A9
3A05	A9
3A06	A8
3A07	B8
3A08	B9
3A11	B8
3A13	B9
3A14	A10
3A19	A9
3A26	A8
3A27	A9
3A28	A9
3A29	A9
3A30	A9
3A31	A9
3B10	B3
3B11	A3
3B12	A3
3B13	B5
3B14	A3
3B15	B5
3B17	A3
3B18	A3
3B19	A3
3G15	B1
3G19	B1
3G48	B1
3G56	D1
3G57	D1
3G58	D1
3G59	D1
3G60	D2
3G61	D2
3G65	B1
3J01	D3
3J02	D3
3J03	D3
3K00	F2
3K01	F2
3K02	E3
3K03	F3
3K05	E3
3K09	F2
3K12	F2
3K15	E1
3K16	E2
3K18	F2
3K21	F2
3K25	E2
3K26	E2
3K27	F1
3K28	E2
3K29	E1
3K30	E2
3K31	E2
3K32	E2
3K33	E1
3K34	F1
3K49	E2
3K50	E2
3K51	E1
3K52	F1
3L06	B6
3L07	B6
3L08	A6
3L09	B6
3L10	A8
3L12	B6
3L13	B6
3L20	A8
3L21	A9
3L22	A9
3L23	A9
3L24	A9
3L25	A9
3L26	B6
4110	E6
4111	E6
4117	E5
4120	E5
4124	D6
4203	A6
4204	A6
4205	A6
4206	A6
4208	D7
4209	D7
4214	A6
4215	A6
4301	B6
4302	A8
4303	A8
4308	B7
4309	A8
4310	A8
4314	B6
4315	B6
4401	A8
4402	A8
4403	B8
4406	C8
4601	F6
4602	F6
4603	C8
4604	C8
4802	E8
4803	F8
4902	B9
4903	B9
4B01	B4
4C01	A5
4C55	A3
4C56	A3
4C57	A4
4C58	A4
4C59	A4
4C60	A4
4C61	A3
4C62	A3
4H01	D2
4H02	D2
4H03	D3
4H04	D2
4H05	D2
4L20	A8
4L21	A9
4L24	A9
4L25	A9
5110	E6
5111	E6
5113	E6
5114	D6
5116	D6
5210	C6
5302	A8
5304	A8
5401	C8
5402	C8
5403	C8
5A03	A10
5A04	B10
5A05	A9
5A06	A9
5B01	B3
5B02	B4
5B03	B3
5B04	B5
5B05	B4
5B06	A5
5B10	A4
5B11	A5
5F10	D3
5F11	D3
5G01	C3
5G02	C3
5G04	D3
5H01	D3
5H02	D1
5K03	F1
5K04	D2
5K05	D3
6103	E6
6301	A6
6302	B8
6303	B8
6304	B8
6308	A8
6309	A8
6310	A8
6311	A8
6312	A8
6313	A8
6604	F6
6605	F6
6606	F6
6607	F6
6615	E6
6B01	B3
6B02	B5
6B03	B5
6J03	D3
7109	E6
7113	D6
7114	D6
7202	C7
7207	A6
7311	B7
7312	A6
7313	A8
7316	B7
7410	B8
7601	F6
7810	E8
7812	E7
7813	E7
7814	F7
7817	E7
7824	F7
7825	F7
7851	E7
7852	E7
7860	F8
7922	B10
7A01	A9
7A05	A9
7A06	A9
7A07	A9
7B01	B3
7B03	B5
7B04	C4
7B05	A3
7G00	C2
7G06	C1
7H00	D2
7H02	C3
7J04	D3
7J05	D3
7K00	F2
7K04	F3

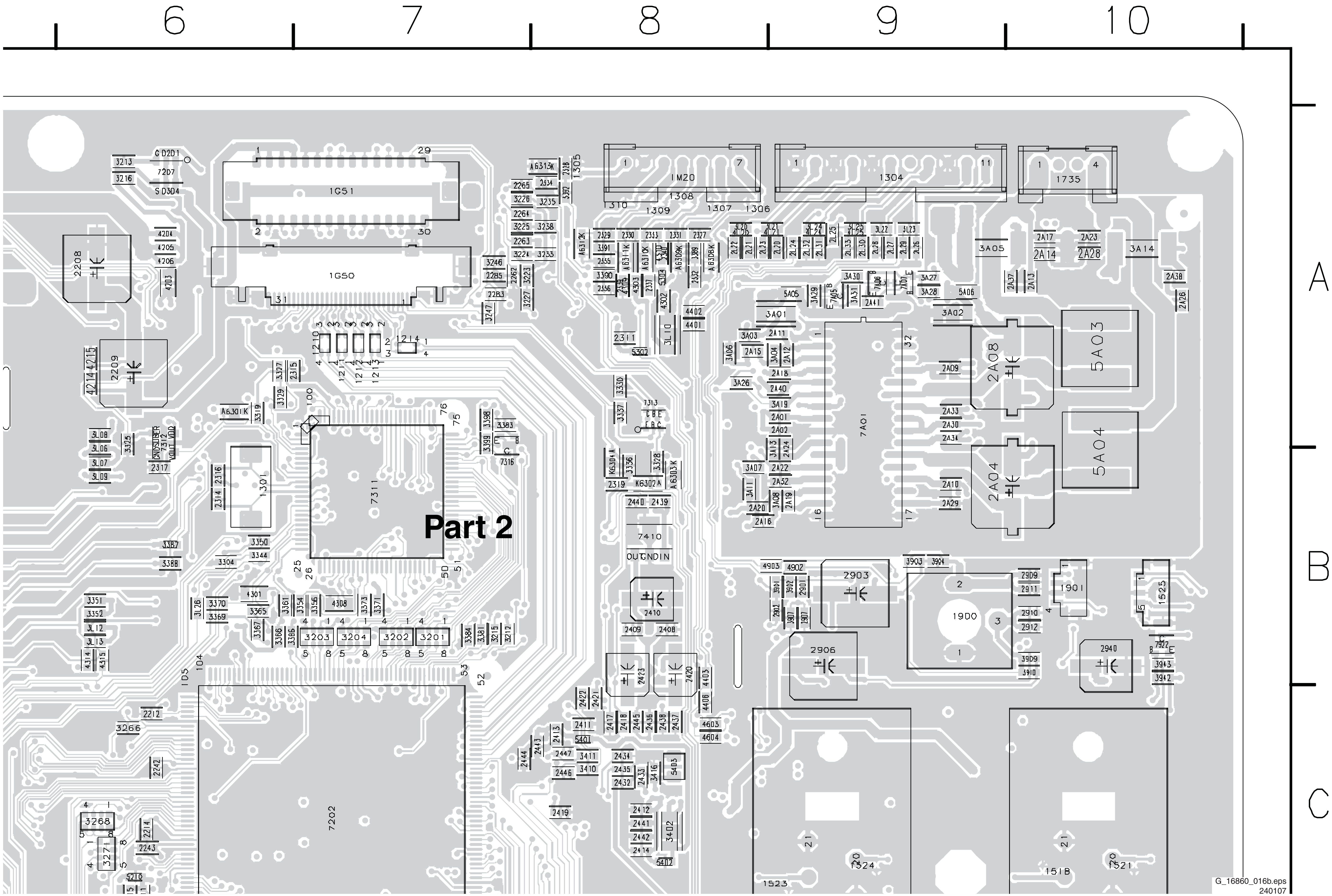


Layout Small Signal Board (Part 1 Top Side)

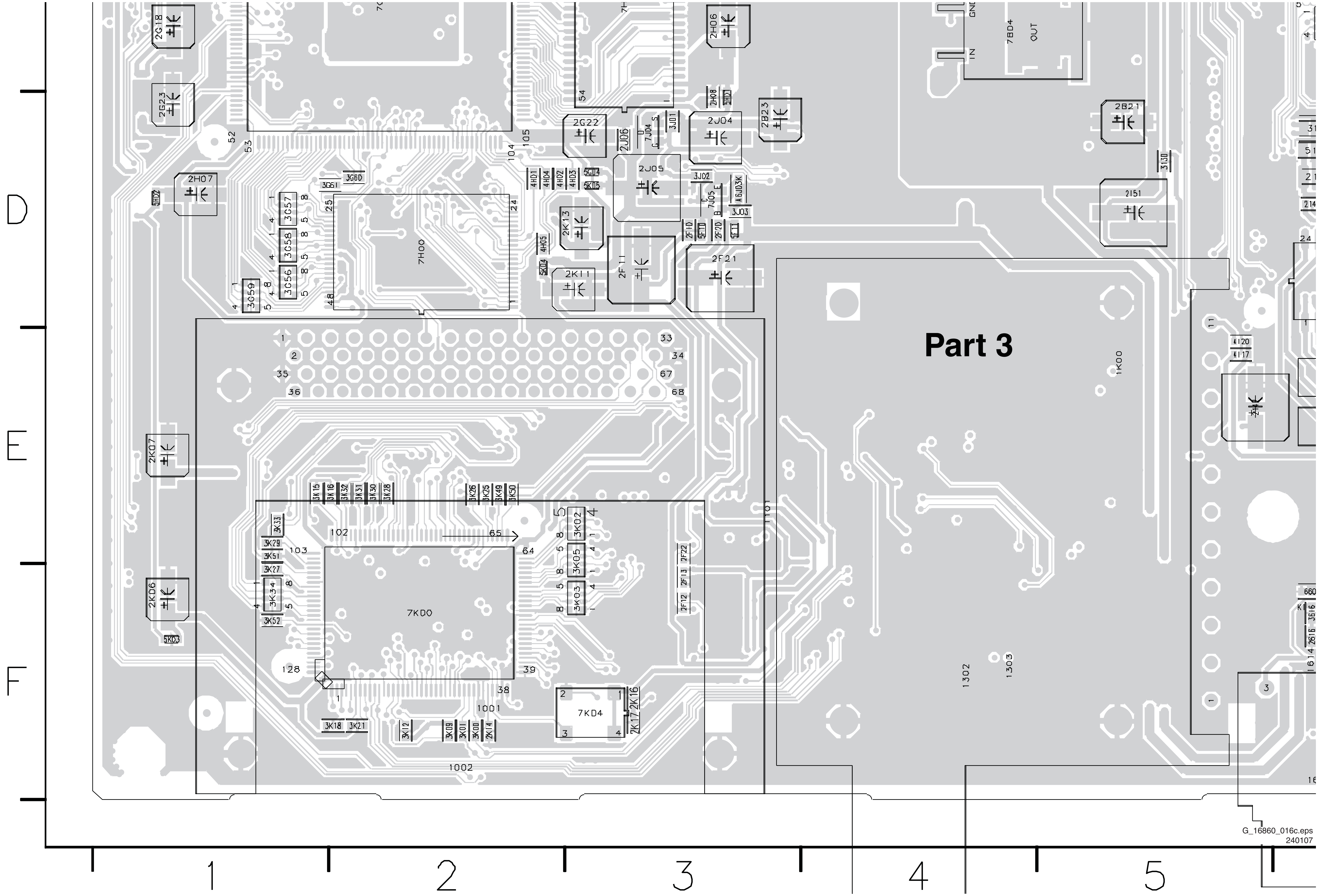


G_16860_016a.eps
240107

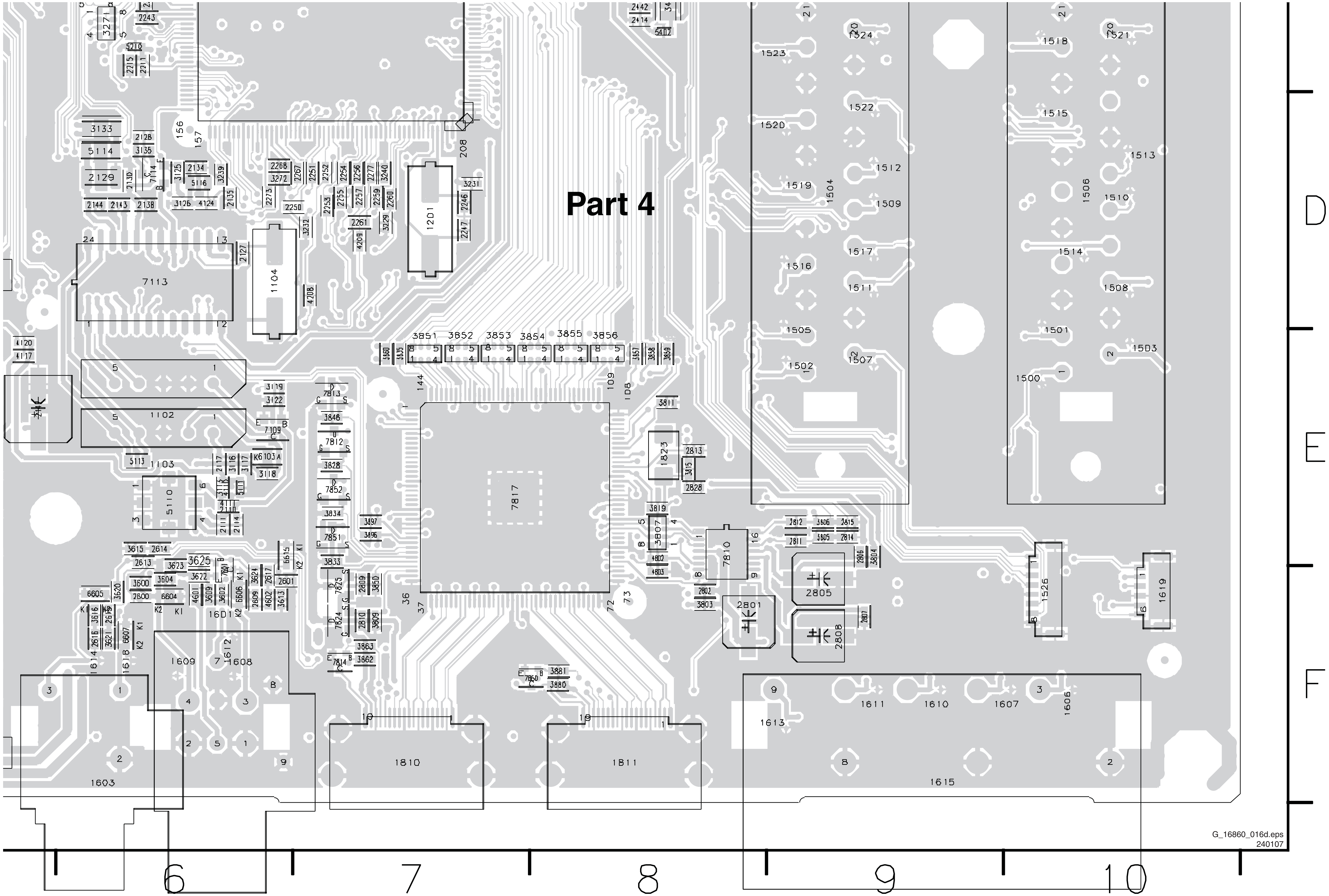
Layout Small Signal Board (Part 2 Top Side)



Layout Small Signal Board (Part 3 Top Side)

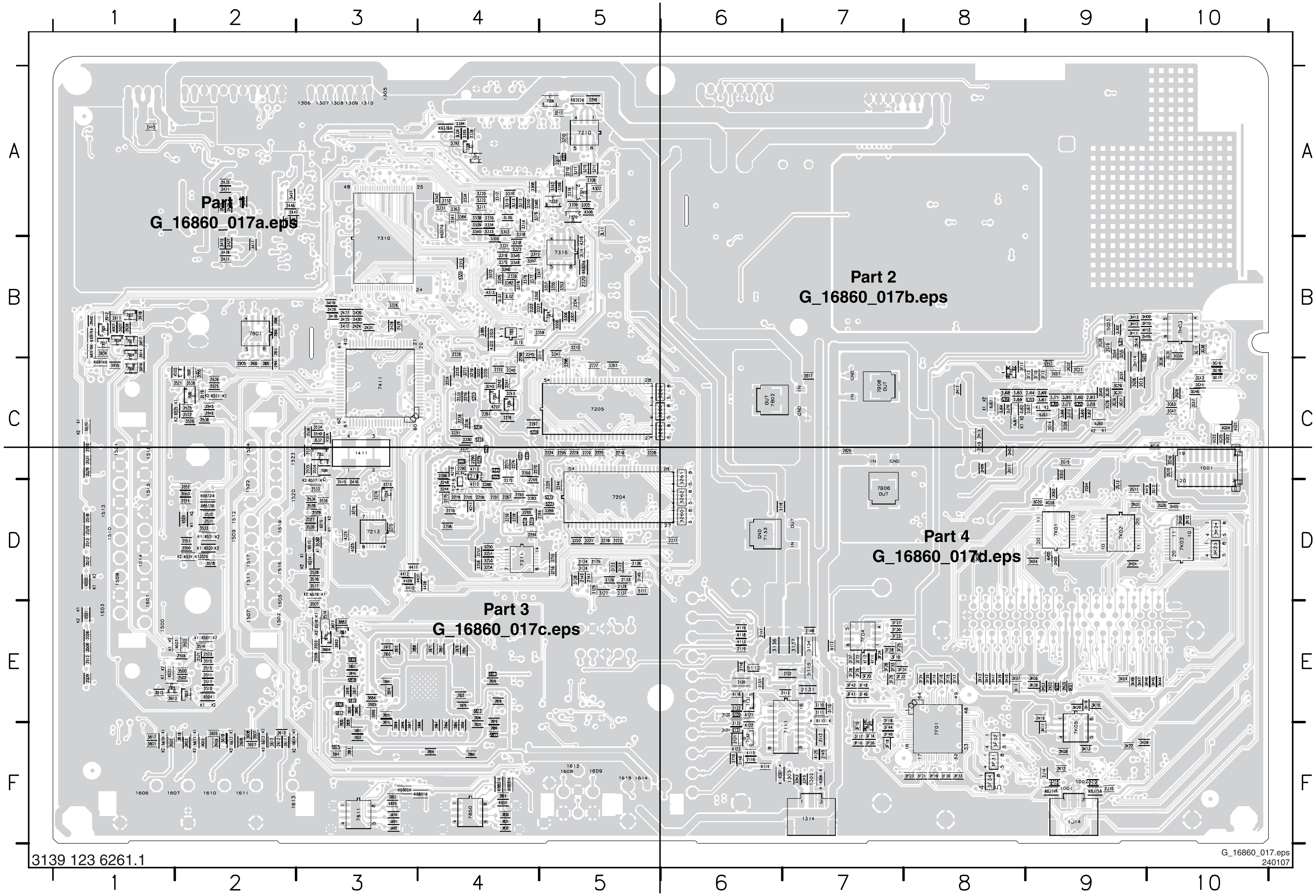


Layout Small Signal Board (Part 4 Top Side)

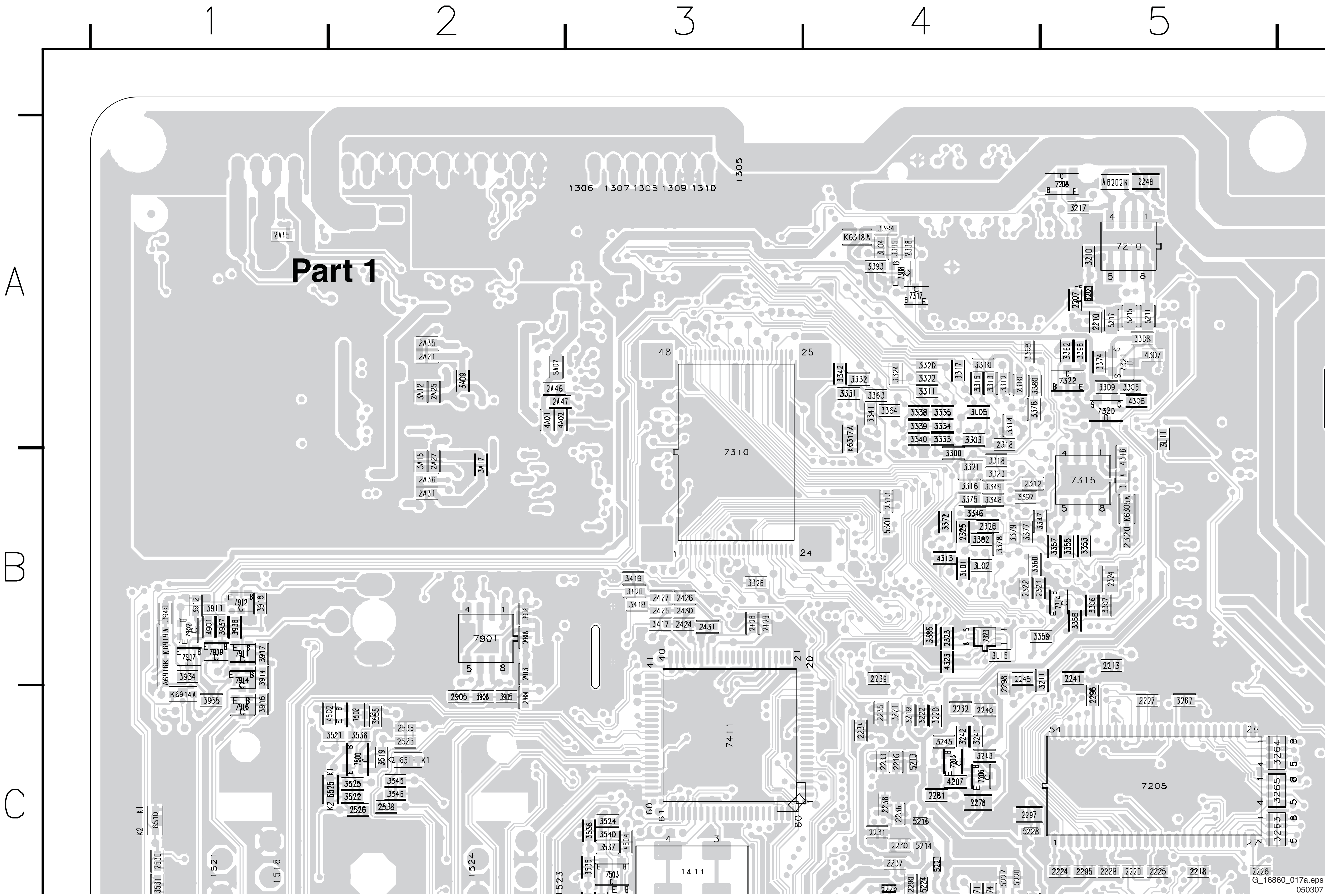


Layout Small Signal Board (Overview Bottom Side)

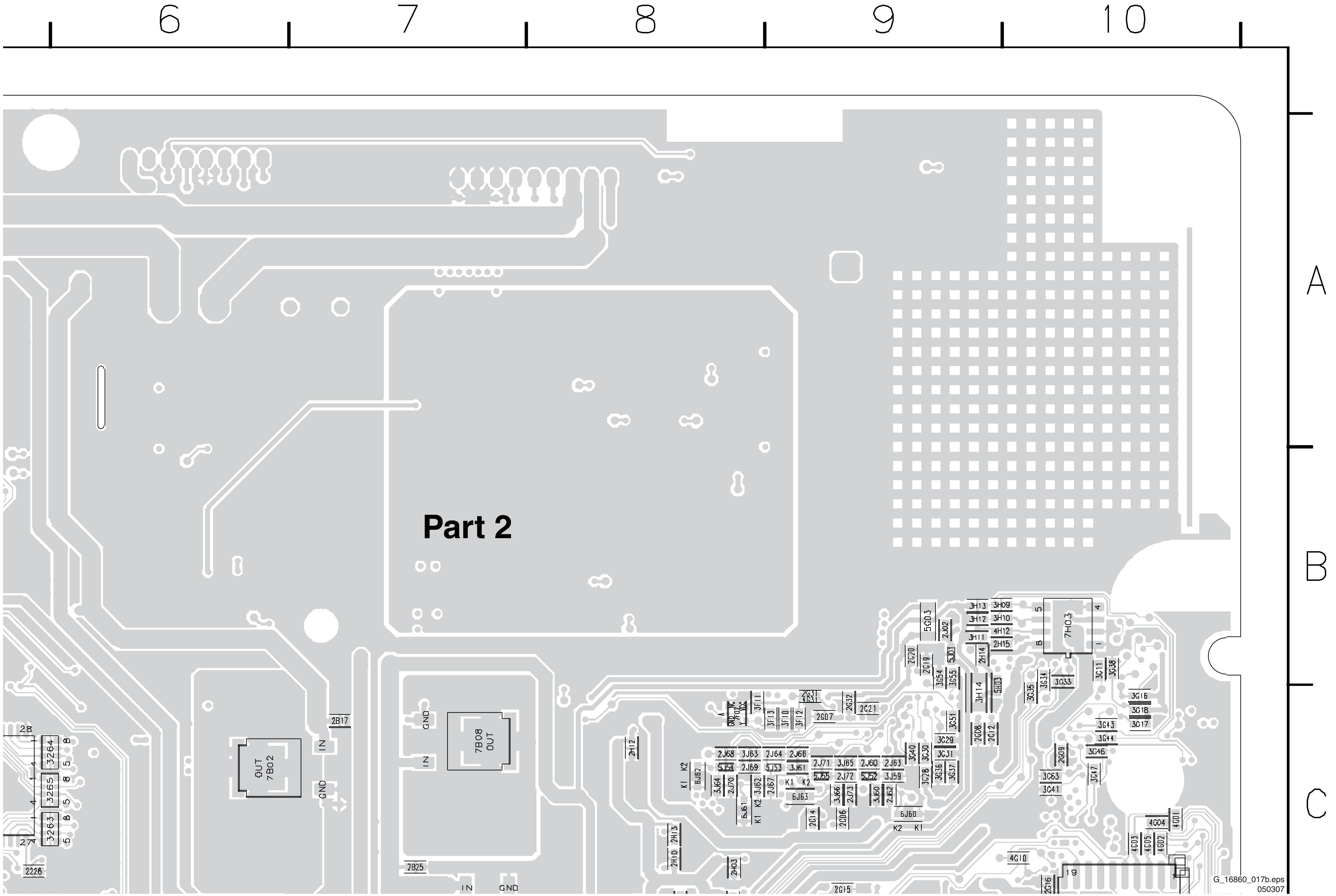
1001	F9
1002	F9
1215	D4
1216	C4
1302	F7
1303	F7
1314	F7
1411	C3
1G01	C10
1J14	F9
2112	F7
2113	E7
2115	F6
2116	F6
2118	E6
2119	E6
2120	E6
2121	F6
2122	E6
2123	D5
2124	D5
2125	D5
2126	D5
2131	E7
2132	E7
2133	D5
2136	D5
2137	D5
2139	D5
2140	D5
2141	D5
2145	D5
2146	F6
2147	E6
2148	E7
2149	F7
2205	D4
2206	D4
2207	A5
2210	A5
2213	B5
2216	C4
2217	D6
2218	C5
2219	D5
2220	C5
2221	D5
2222	D5
2223	D5
2224	C5
2225	C5
2226	C5
2227	C5
2228	C5
2229	D5
2230	C4
2231	C4
2232	C4
2233	C4
2234	C4
2235	C4
2236	C4
2237	C4
2238	C4
2239	B4
2240	C4
2241	B5
2244	D5
2245	B4
2248	A5
2258	D4
2266	C4
2269	D4
2270	C4
2271	C4
2272	D4
2274	C4
2275	D4
2276	D4
2278	C4
2279	D4
2280	D4
2281	C4
2282	D4
2284	D5
2286	C4
2287	D4
2288	D4
2289	D5
2290	C4
2291	D4
2292	C4
2293	D4
2294	D4
2295	C5
2296	C5
2297	C4
2298	B4
2310	A4
2312	B4
2313	B4
2318	A4
2320	B5
2321	B4
2322	B4
2323	B4
2324	B5
2325	B4
2326	B4
2338	A4
2415	D3
2416	D3
2424	B3
2425	B3
2426	B3
2427	B3
2428	B3
2429	B3
2430	B3
2431	B3
2502	E2
2506	E2
2508	E3
2509	E1
2512	E1
2514	E3
2515	E2
2517	E2
2518	D1
2520	D1
2521	E2
2523	E2
2524	D2
2525	C2
2526	C2
2527	D3
2528	D3
2529	D3
2530	C1
2531	D2
2533	D3
2534	D3
2535	C3
2536	C2
2538	C2
2602	F1
2603	F2
2606	F2
2607	F2
2608	F2
2610	F2
2612	F2
2803	F3
2804	F4
2816	E3
2817	E3
2818	E4
2819	E4
2829	F3
2830	F3
2833	F3
2835	F4
2836	E4
2838	E4
2839	E3
2840	E3
2843	F3
2844	F3
2845	E3
2847	F3
2848	F3
2849	F3
2850	F4
2851	F3
2852	E4
2853	E3
2854	E3
2855	E3
2856	E4
2857	E4
2858	E3
2859	F4
2860	F4
2861	E3
2865	F4
2866	F4
2867	F4
2868	F4
2869	F4
2870	E4
2871	E4
2872	E3
2873	E3
2874	E3
2875	F3
2876	E4
2904	C2
2905	C2
2908	B2
2913	B2
2A21	A2
2A25	A2
2A27	B2
2A31	B2
2A35	A2
2A36	B2
2A45	A1
2A46	A2
2A47	A2
2B17	C7
2B25	C7
2F14	E8
2F15	E8
2F16	E8
2F17	E8
2F18	E7
2F19	F8
2F23	F8
2F24	E8
2F25	E8
2F26	F7
2F27	E7
2F28	E7
2F29	E7
2F30	E7
2F31	E7
2F32	E7
2F33	E7
2G03	C9
2G04	D9
2G05	D10
2G06	C9
2G07	C9
2G08	C9
2G09	C10
2G10	C10
2G11	D9
2G12	C9
2G13	D9
2G14	C9
2G15	C9
2G16	C10
2G19	B9
2G20	B9
2G21	C9
2G31	C9
2G32	C9
2H03	C8
2H04	D9
2H09	C8
2H10	C8
2H11	C8
2H12	C8
2H13	C8
2H14	B9
2H15	B9
2J02	B9
2J14	F9
2J15	F9
2J60	C9
2J62	C9
2J63	C9
2J64	C9
2J66	C9
2J67	C9
2J68	C8
2J69	C8
2J70	C8
2J71	C9
2J72	C9
2J73	C9
2K00	D10
2K01	D9
2K02	E9
2K03	E9
2K04	D9
2K05	E9
2K08	F9
2K09	F9
2K10	E9
2K12	F9
2K15	D10
3110	E7
3111	E7
3115	E7
3120	E6
3121	F6
3123	D5
3124	D5
3127	D5
3128	D5
3129	D5
3131	E6
3132	F6
3134	E7
3136	E6
3137	E7
3210	A5
3211	B5
3217	A5
3219	C4
3220	C4
3221	C4
3222	C4
3228	D4
3230	D4
3241	C4
3242	C4
3243	C4
3244	D4
3245	C4
3248	D4
3250	D4
3251	D4
3253	D4
3254	D4
3255	D5
3256	D5
3257	D4
3258	D4
3260	D6
3261	C6
3262	D6
3263	C5
3264	C5
3265	C5
3267	C5
3273	D3
3274	D3
3275	D3
3276	D3
3300	B4
3303	A4
3305	A5
3306	B5
3307	B5
3308	A5
3309	A5
3310	A4
3311	A4
3312	A4
3313	A4
3314	A4
3315	A4
3316	B4
3317	A4
3318	B4
3320	A4
3321	B4
3322	A4
3323	B4
3324	A4
3326	B3
3331	A4
3332	A4
3333	A4
3334	A4
3335	A4
3338	A4
3339	A4
3340	A4
3341	A4
3342	A4
3343	F7
3345	F7
3346	B4
3347	B4
3348	B4
3349	B4
3353	B5
3355	B5
3357	B5
3358	B5
3359	B5
3360	B4
3362	A5
3363	A4
3364	A4
3368	A4
3372	B4
3374	A5
3375	B4
3376	A4
3377	B4
3378	B4
3379	B4
3380	A4
3382	B4
3385	B4
3393	A4
3394	A4
3395	A4
3396	A5
3397	B4
3417	B3
3418	B3
3419	B3
3420	B3
3500	E2
3502	E2
3503	E3
3506	E1
3507	E3
3508	E1
3510	E2
3511	E2
3512	D1
3513	D1
3514	E2
3515	E2
3516	D3
3517	D3
3518	D2
3519	C2
3520	D2
3521	C2
3522	C2
3523	D3
3524	C3
3525	C2
3526	D3
3528	D3
3529	C1
3530	D3
3531	C1
3532	D2
3533	D2
3535	C3
3536	C3
3537	C3
3538	C2
3540	C3
3545	C2
3546	C2
3550	D2
3551	D2
3552	D2
3553	D2
3554	C3
3555	C2
3601	F1
3603	F2
3605	F2
3607	F2
3608	F2
3611	F2
3612	F2
3617	F1
3618	F2
3619	F2
3801	F3
3802	F3
3810	F3
3830	F4
3831	F4
3832	F4
3864	E3
3877	E3
3882	E3
3883	E3
3884	E3
3885	E3
3886	E3
3905	C2
3906	B2
3908	C2
3911	B1
3912	B1
3913	E1
3914	B1
3915	E1
3916	C1
3917	B1
3918	B1
3934	B1
3935	C1
3937	B1
3938	B1
3940	B1
3A09	A2
3A12	A2
3A15	B2
3A17	B2
3F10	C9
3F11	C8
3F12	C9
3F13	C9
3F14	F7
3F15	F7
3F16	F7
3F17	F7
3F18	F7
3F19	E7
3F20	E7
3F21	F8
3F22	E7
3F23	E7
3F24	E7
3F25	E7
3F26	E7
3F27	E7
3F28	E7
3F29	E7
3F30	F8
3F31	F8
3F32	F8
3F33	F8
3F34	F8
3F40	F7
3F41	E7
3F42	E7
3F44	F7
3F46	E7
3F48	E7
3G11	B10
3G12	D10
3G16	C10
3G17	C10
3G18	C10
3G20	D9
3G28	C9
3G29	C9
3G30	C9
3G31	C9
3G33	B10
3G34	B10
3G35	C10
3G36	C9
3G37	C9
3G38	B10
3G40	C9
3G41	C10
3G43	C10
3G44	C10
3G46	C10
3G47	C10
3G51	C9
3G54	B9
3G55	B9
3G62	D9
3G63	C10
3H00	D9
3H05	D10
3H09	B9
3H10	B9
3H11	B9
3H12	B9
3H13	B9
3H14	C9
3J14	F9
3J15	F9
3J59	C9
3J60	C9
3J61	C9
3J62	C8
3J63	C8
3J64	C8
3J65	C9
3J66	C9
3K04	E9
3K06	E9
3K07	E8
3K08	D8
3K10	E9
3K11	F9
3K13	F9
3K17	E8
3K19	E9
3K20	E9
3K22	F9
3K23	D10
3K24	D10
3K38	E9
3K39	E8
3K40	E8
3K41	E8
3K42	E8
3K43	E8
3K44	E10
3K45	E10
3K46	E9
3K47	E9
3K48	E9
3L01	B4
3L02	B4
3L04	A4
3L05	A4
3L11	A5
3L14	B5
3L15	B4
4112	E7
4113	E6
4114	F6
4115	F6
4116	E6
4118	E6
4119	E6
4121	E6
4122	F6
4123	F6
4125	F7
4207	C4
4210	C4
4211	D4
4212	D4
4213	C4
4306	A5
4307	A5
4313	B4
4316	B5
4323	B4
4324	D3
4325	D3
4407	D4
4408	D4
4409	D3
4410	D3
4411	D3
4412	D3
4502	C2
4504	C3
4804	F4
4805	F3
4901	B1
4A01	A2
4A02	A2
4F11	E7
4F12	E7
4G01	C10
4G02	C10
4G03	C10
4G04	C10
4G05	C10
4G09	D9
4G10	C10
4G31	C9
4H00	D9
4H12	B9
4H15	D10
4J14	F9
4J15	F9
5112	E6
5115	E7
5117	D5
5118	D6
5120	E6
5121	F6
5211	A5
5212	D5
5213	C4
5214	C4
5215	A5
5216	C4
5217	A5
5218	D4
5219	D4
5220	C4
5221	C4
5222	C4
5223	D5
5224	C4
5225	C4
5226	C4
5227	C4
5228	C4
5301	B4
5810	E3
5811	F4
5812	E4
5813	E4
5814	E3
5815	F3
5816	E3
5817	E3
5818	E3
5A07	A2
5G03	B9
5H03	C9
5J01	B9
5J52	C9
5J53	C9
5J54	C8
5J55	C9
5K01	E9
5K02	E9
6110	E7
6201	A5
6202	A5
6305	B5
6306	F7
6307	F6
6317	A4
6318	A4
6501	E1
6504	E2
6505	D1
6507	E2
6509	D2
6510	C1
6511	C2
6512	D2
6513	D2
6514	D3
6515	D3
6516	D3
6517	D3
6518	E3
6519	D3
6520	D2
6521	D2
6522	E1
6523	E2
6524	D2
6525	C2
6610	F1
6611	F2
6612	F2
6613	F2
6614	F2
6801	F4
6802	F3
6830	F4
6831	F4
6914	C1
6916	B1
6919	B1
6J14	F9
6J15	F9
6J60	C9
6J61	C8
6J62	C8
6J63	C9
7111	F7
7131	E6
7132	F6
7133	D6
7203	C4
7204	D5
7205	C5
7206	C4
7208	A5
7210	A5
7211	D4
7213	D3
7214	D3
7308	A4
7310	B3
7314	B5
7315	B5
7317	A4
7320	A5
7321	A5
7322	A5
7323	B4
7411	C3
7500	C2
7502	C2
7503	C3
7504	C3
7811	F3
7816	E3
7850	F4
7861	E3
7901	B2
7902	B1
7911	B1
7912	B1
7913	E2
7914	B1
7915	E1
7916	C1
7917	B1
7919	B1
7B02	C6
7B06	D7
7B08	C7
7F01	F8
7F02	C8
7F03	F7
7F04	E7
7H03	B10
7K01	D9
7K02	D9
7K03	D10
7K05	F9



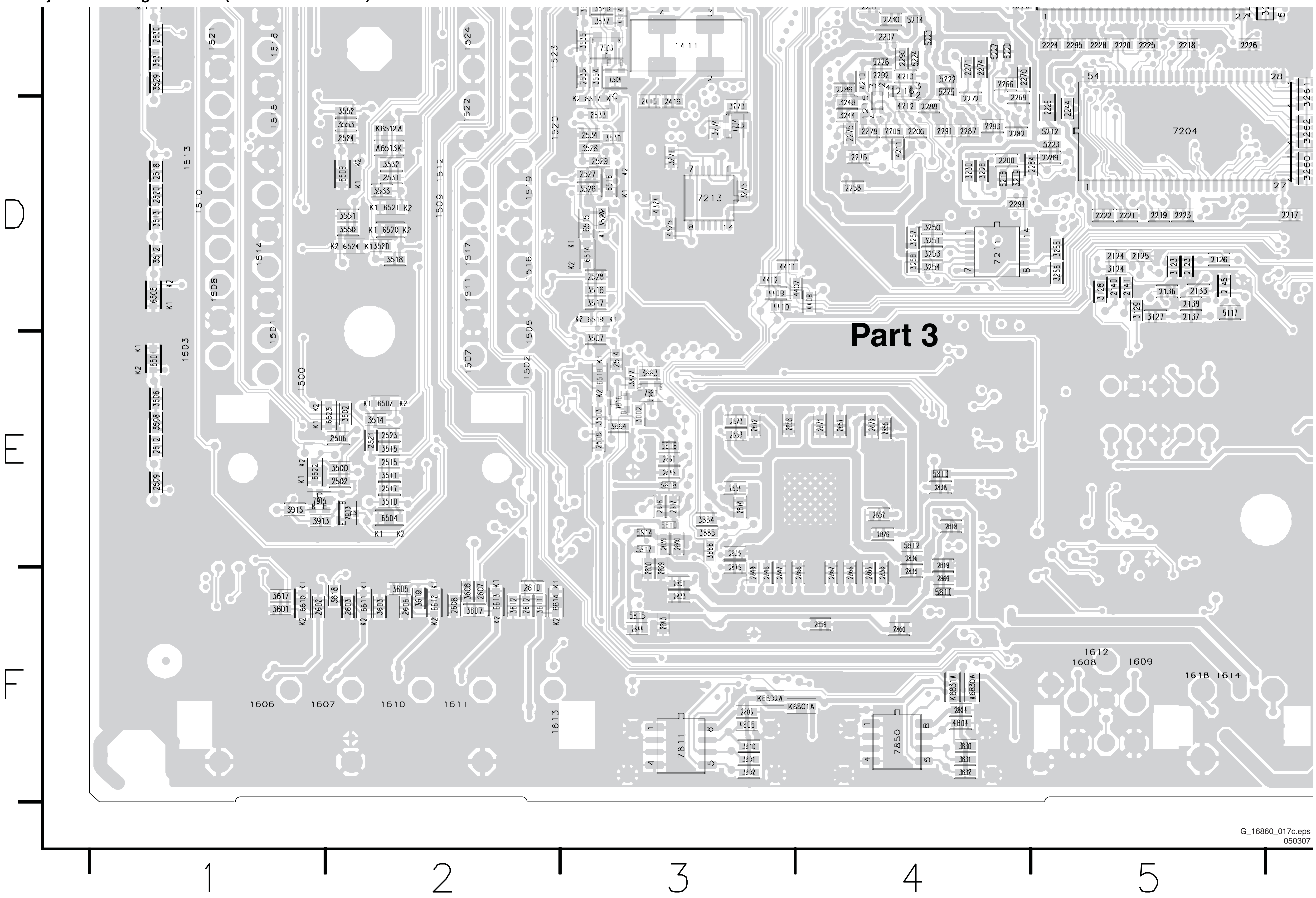
Layout Small Signal Board (Part 1 Bottom Side)



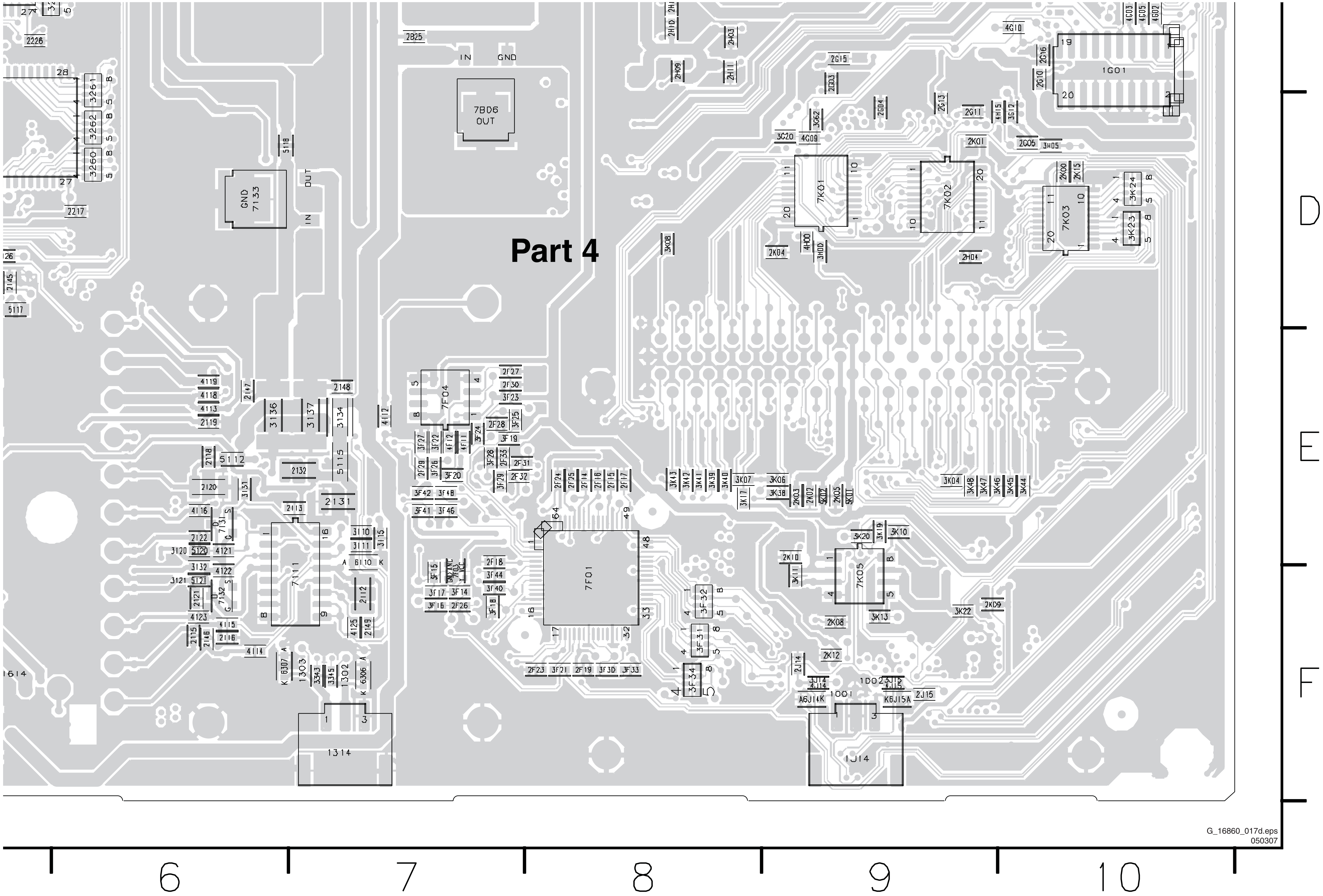
Layout Small Signal Board (Part 2 Bottom Side)



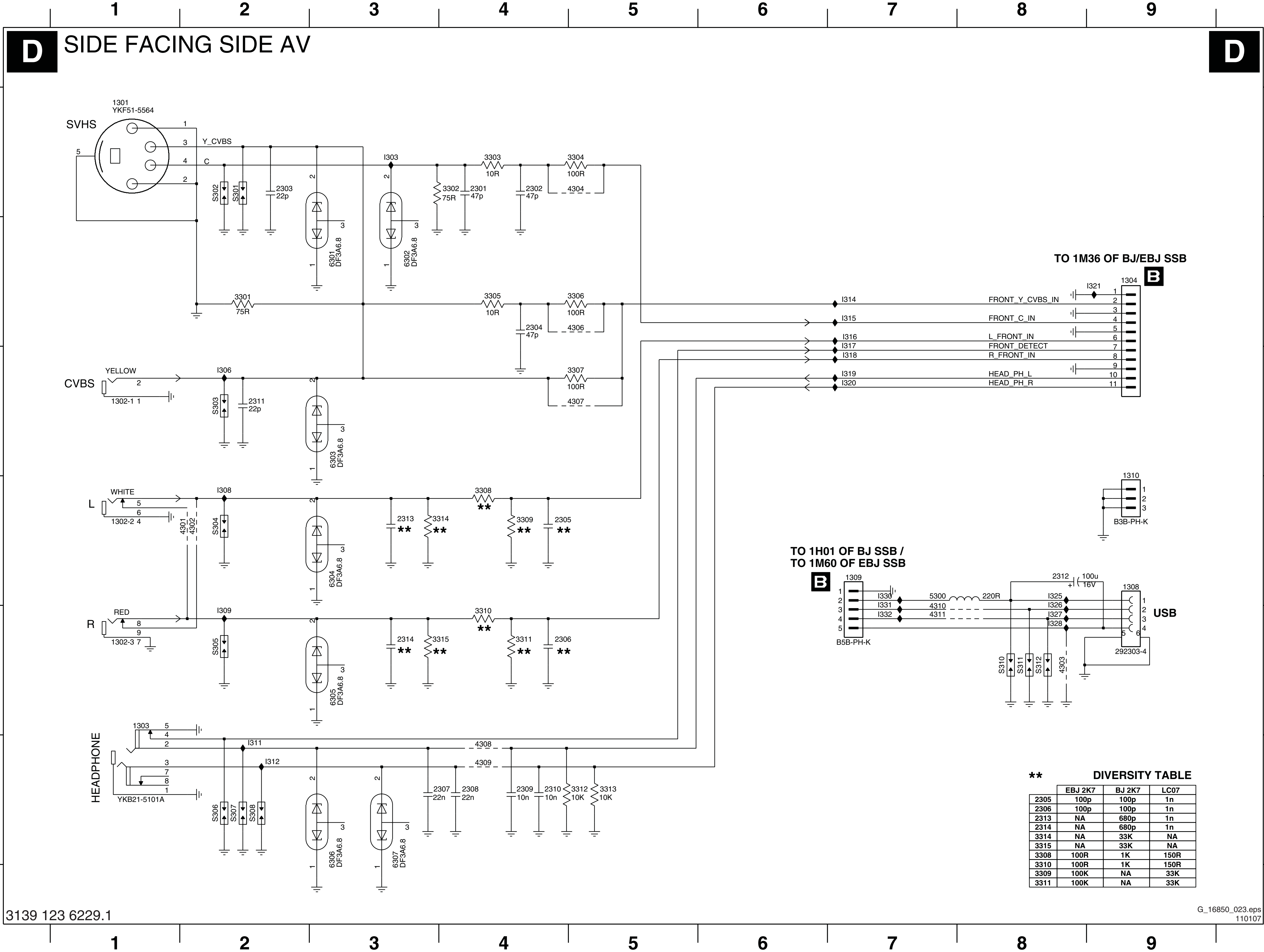
Layout Small Signal Board (Part 3 Bottom Side)



Layout Small Signal Board (Part 4 Bottom Side)



Side A/V Panel



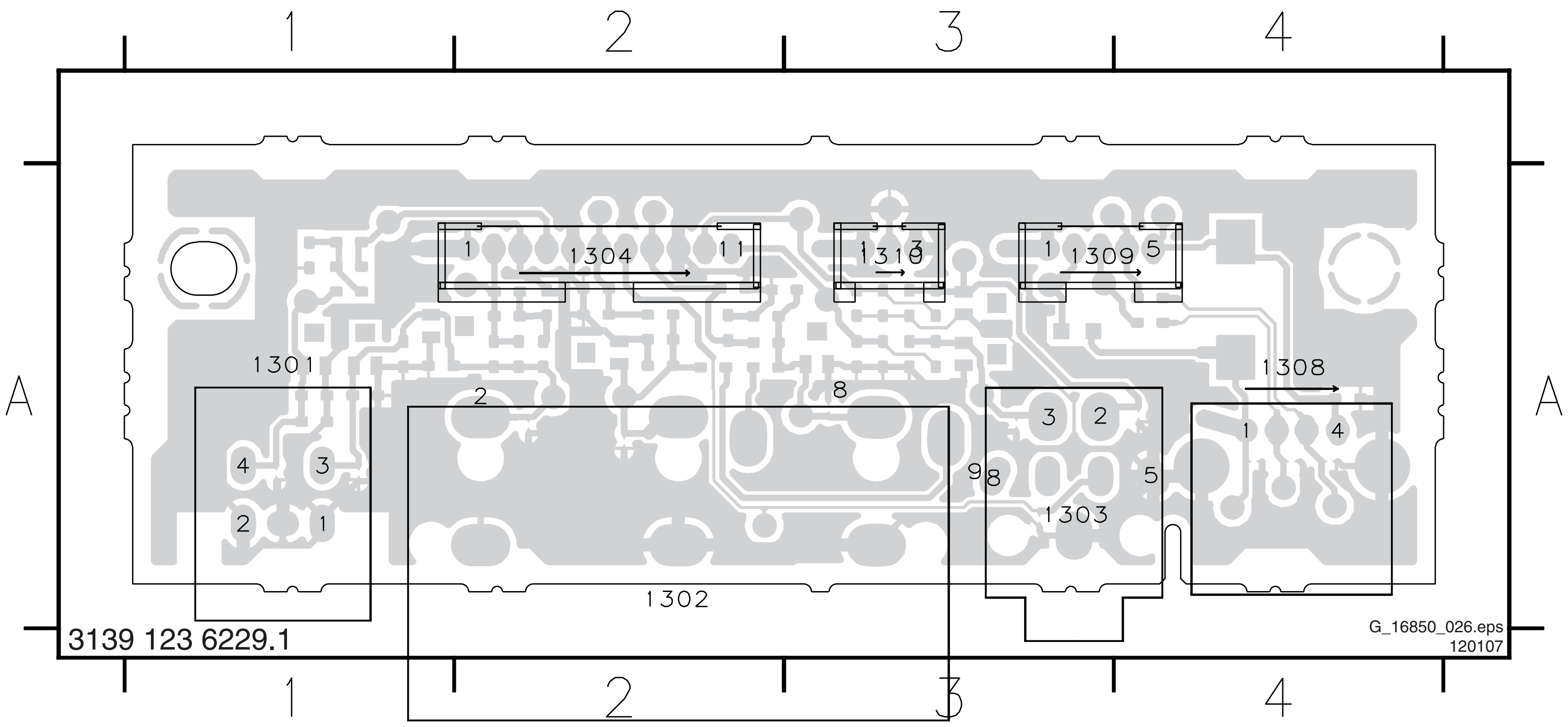
** **DIVERSITY TABLE**

	EBJ 2K7	BJ 2K7	LC07
2305	100p	100p	1n
2306	100p	100p	1n
2313	NA	680p	1n
2314	NA	680p	1n
3314	NA	33K	NA
3315	NA	33K	NA
3308	100R	1K	150R
3310	100R	1K	150R
3309	100K	NA	33K
3311	100K	NA	33K

1301 A1
1302-1 C1
1302-2 D1
1302-3 E1
1303 E1
1304 B9
1308 D9
1309 D7
1310 D9
2301 A4
2302 A4
2303 A2
2304 B4
2305 D4
2306 E4
2307 F4
2308 F4
2309 F4
2310 F4
2311 C2
2312 D8
2313 D3
2314 E3
3301 B2
3302 A4
3303 A4
3304 A5
3305 B4
3306 B5
3307 C5
3308 D4
3309 D4
3310 E4
3311 E4
3312 F5
3313 F5
3314 D4
3315 E4
4301 D2
4302 D2
4303 E8
4304 A5
4306 B5
4307 C5
4308 F4
4309 F4
4310 E7
4311 E7
5300 D7
6301 B3
6302 B3
6303 C3
6304 D3
6305 E3
6306 F3
6307 F3
I303 A3
I306 C2
I308 D2
I309 E2
I311 F2
I312 F2
I314 B7
I315 B7
I316 B7
I317 B7
I318 C7
I319 C7
I320 C7
I321 B9
I325 D8
I326 D8
I327 E8
I328 E8
I330 D7
I331 D7
I332 E7
S301 A2
S302 A2
S303 C2
S304 D2
S305 E2
S306 F2
S307 F2
S308 F2
S310 E8
S311 E8
S312 E8

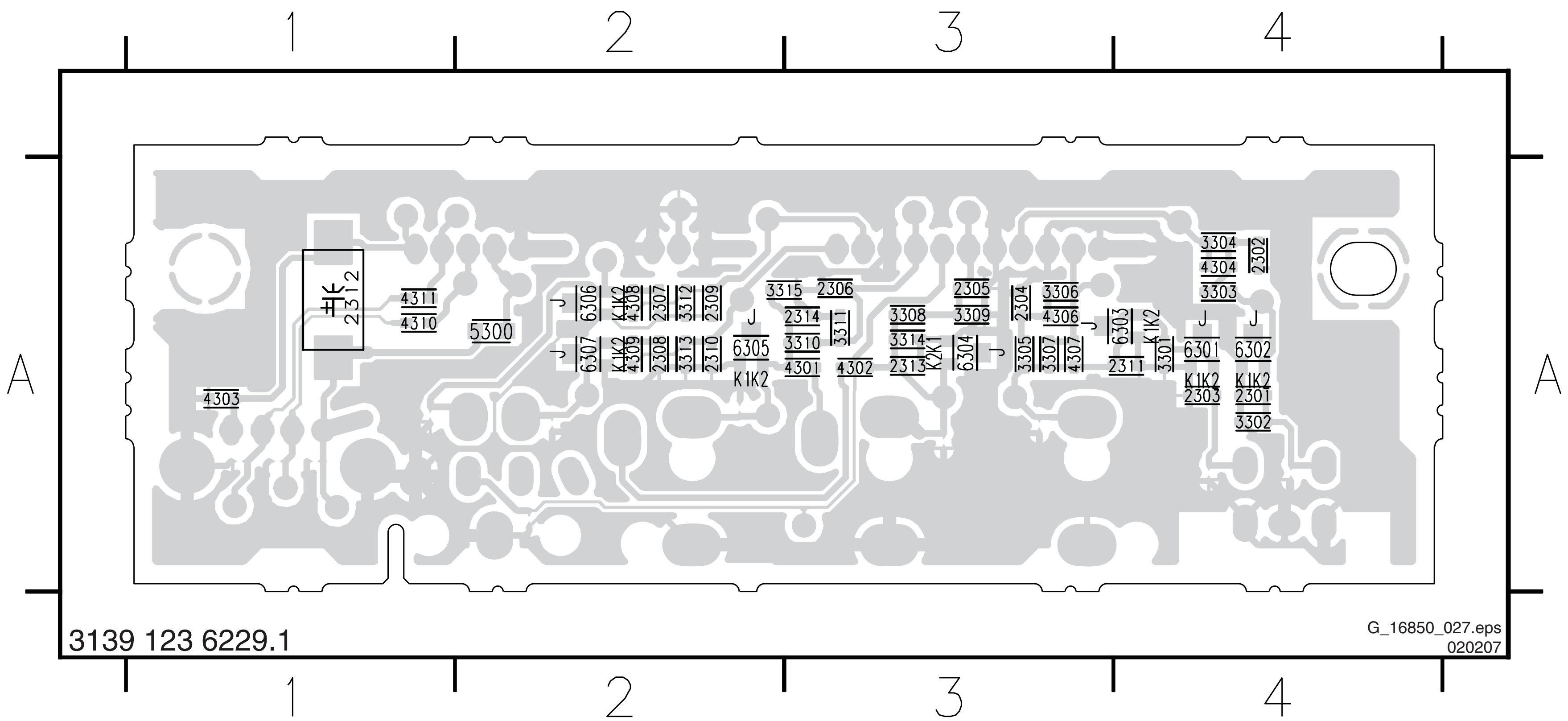
Layout Side A/V Panel (Top Side)

1301	A1	1302	A2	1303	A3	1304	A2	1308	A4	1309	A3	1310	A3

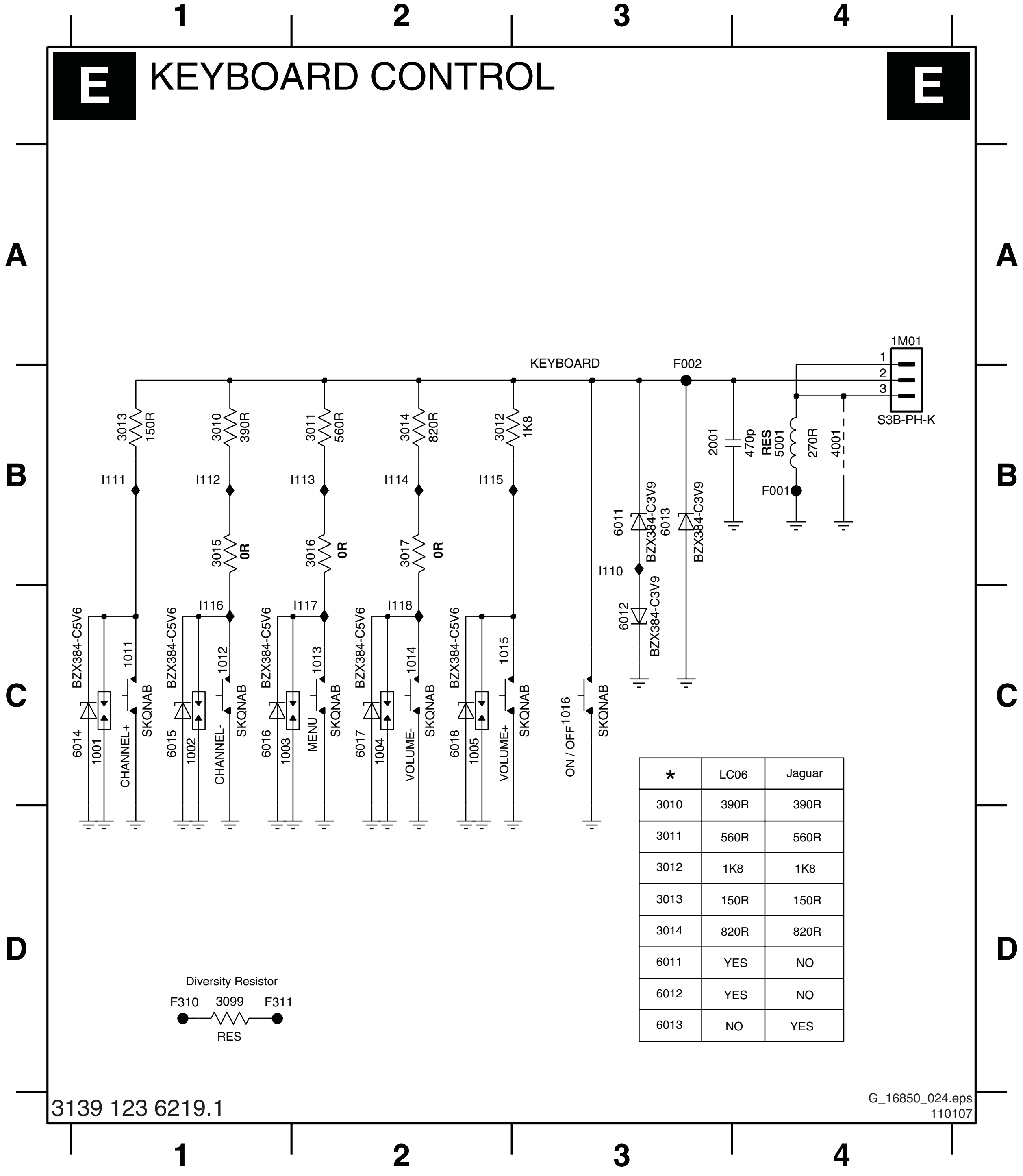


Layout Side A/V Panel (Bottom Side)

2301	A4	2307	A2	2313	A3	3305	A3	3311	A3	4302	A3	4309	A2	6303	A4
2302	A4	2308	A2	2314	A3	3306	A3	3312	A2	4303	A1	4310	A1	6304	A3
2303	A4	2309	A2	3301	A4	3307	A3	3313	A2	4304	A4	4311	A1	6305	A2
2304	A3	2310	A2	3302	A4	3308	A3	3314	A3	4306	A3	5300	A2	6306	A2
2305	A3	2311	A4	3303	A4	3309	A3	3315	A3	4307	A3	6301	A4	6307	A2
2306	A3	2312	A1	3304	A4	3310	A3	4301	A3	4308	A2	6302	A4		



Keyboard Control Panel



*	LC06	Jaguar
3010	390R	390R
3011	560R	560R
3012	1K8	1K8
3013	150R	150R
3014	820R	820R
6011	YES	NO
6012	YES	NO
6013	NO	YES

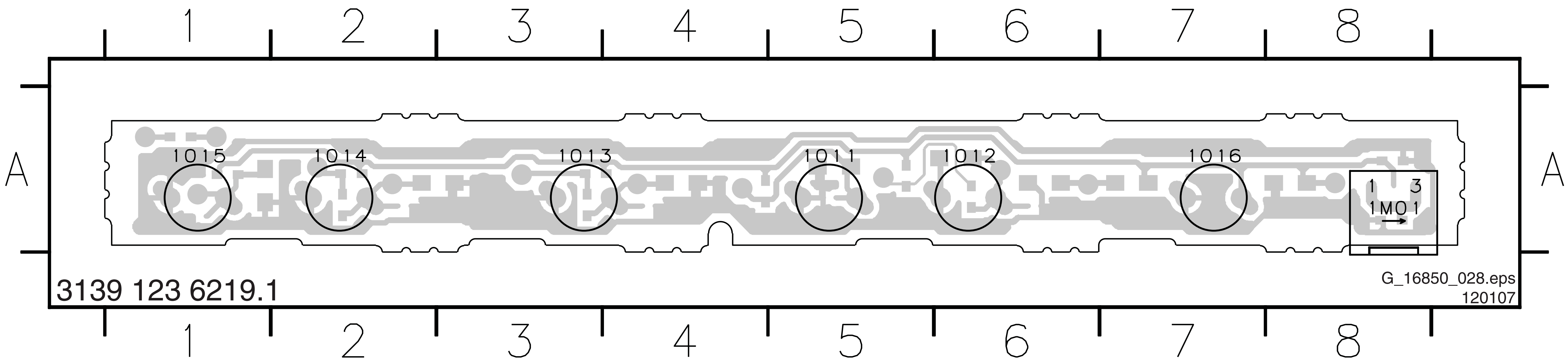
1001 C1
1002 C1
1003 C1
1004 C2
1005 C2
1011 C1
1012 C1
1013 C2
1014 C2
1015 C2
1016 C3
1M01 A4
2001 B3
3010 B1
3011 B2
3012 B2
3013 B1
3014 B2
3015 B1
3016 B2
3017 B2
3099 D1
4001 B4
5001 B4
6011 B3
6012 C3
6013 B3
6014 C1
6015 C1
6016 C1
6017 C2
6018 C2
F001 B4
F002 B3
F310 D1
F311 D1
I110 B3
I111 B1
I112 B1
I113 B2
I114 B2
I115 B2
I116 C1
I117 C2
I118 C2

Personal Notes:

E_06532_012.eps
131004

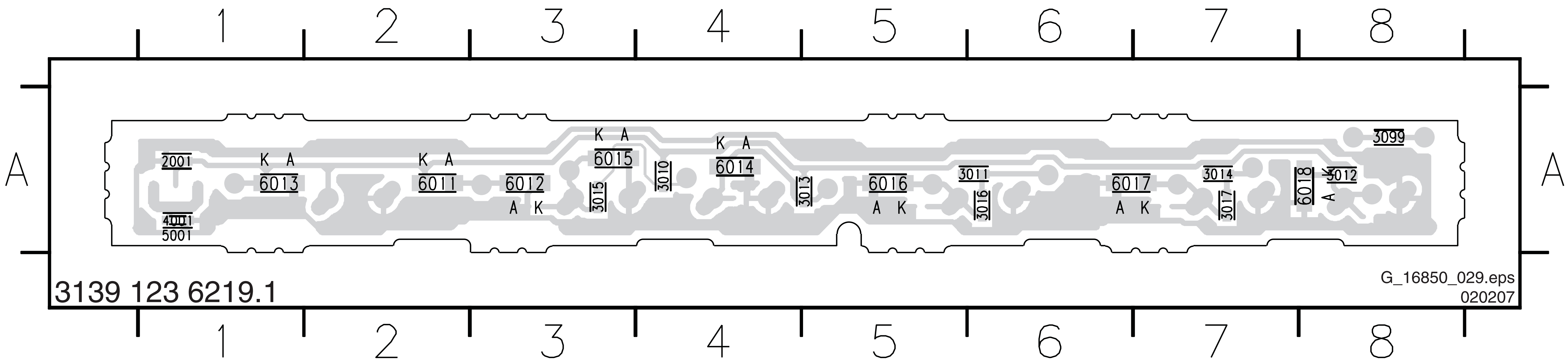
Layout Keyboard Control Panel (Top Side)

1011 A5 1012 A6 1013 A3 1014 A2 1015 A1 1016 A7 1M01 A8

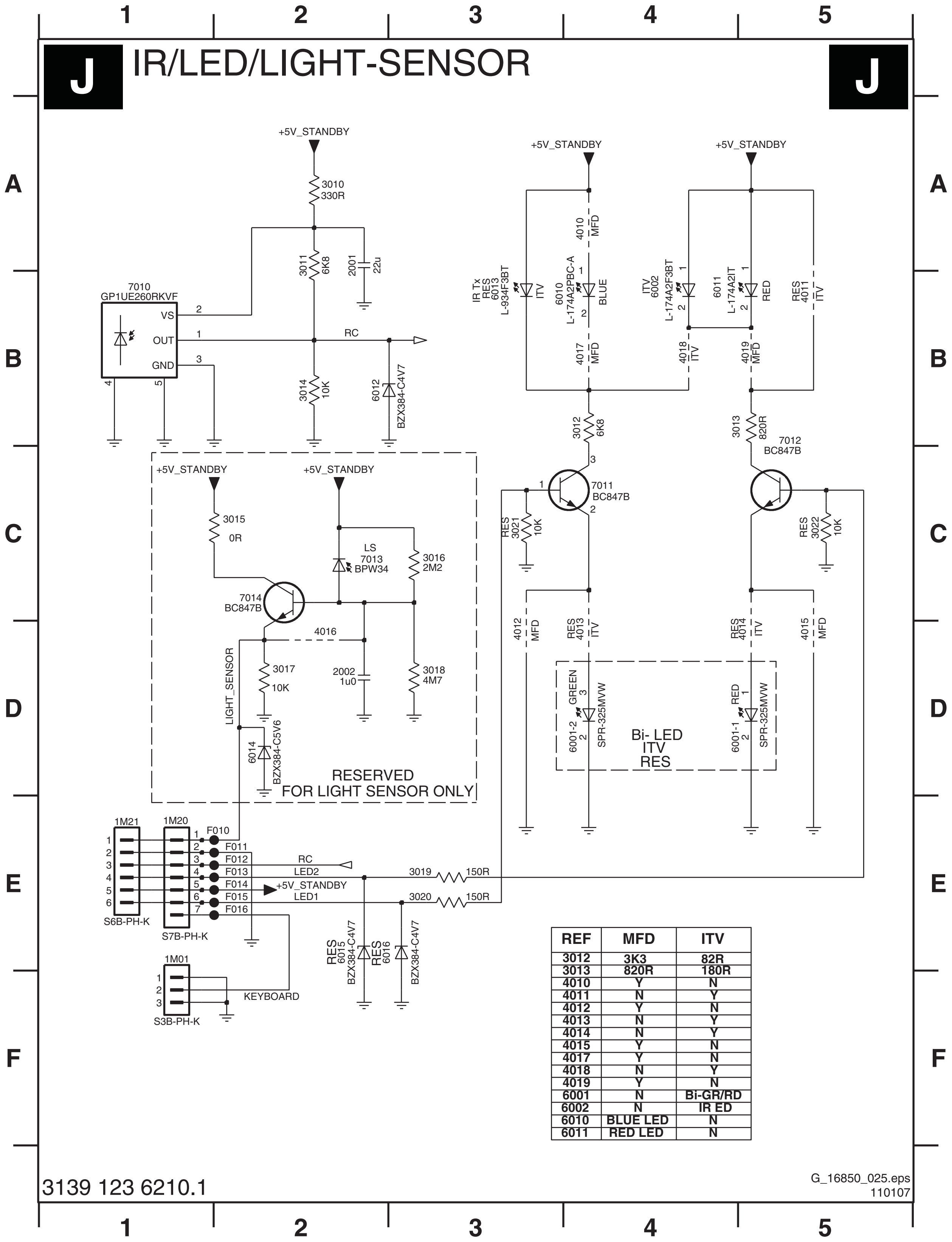


Layout Keyboard Control Panel (Bottom Side)

2001 A1 3011 A6 3013 A5 3015 A3 3017 A7 4001 A1 6011 A2 6013 A1 6015 A3 6017 A6
3010 A4 3012 A8 3014 A7 3016 A6 3099 A8 5001 A1 6012 A3 6014 A4 6016 A5 6018 A8



Front IR / LED Panel



REF	MFD	ITV
3012	3K3	82R
3013	820R	180R
4010	Y	N
4011	N	Y
4012	Y	N
4013	N	Y
4014	N	Y
4015	Y	N
4017	Y	N
4018	N	Y
4019	Y	N
6001	N	Bi-GR/RD
6002	N	IR ED
6010	BLUE LED	N
6011	RED LED	N

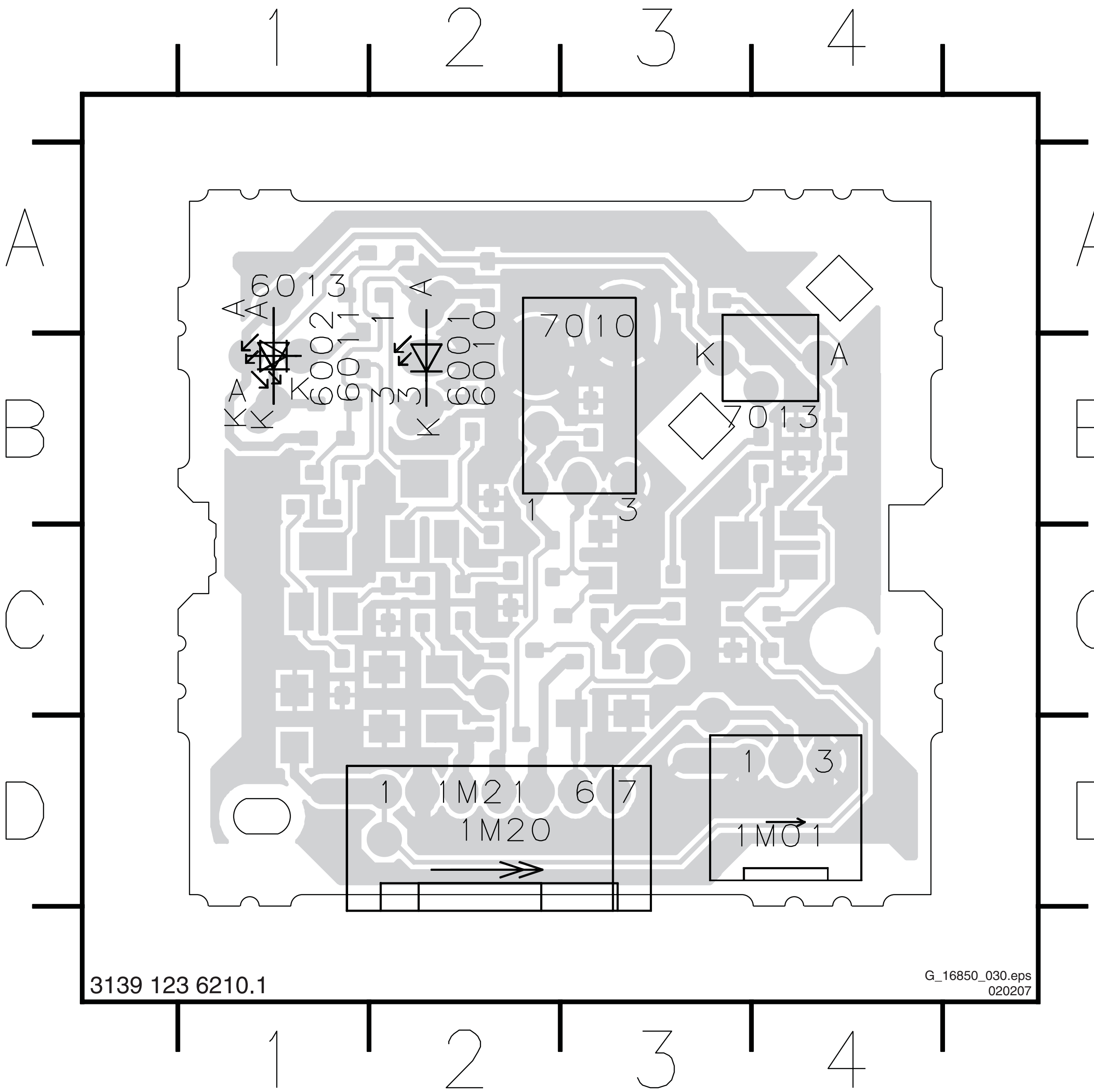
1M01 E1
1M20 E1
1M21 E1
2001 A2
2002 D2
3010 A2
3011 A2
3012 B4
3013 B4
3014 B2
3015 C2
3016 C3
3017 D2
3018 D3
3019 E3
3020 E3
3021 C3
3022 C5
4010 A4
4011 B5
4012 D3
4013 D4
4014 D5
4015 D5
4016 D2
4017 B4
4018 B4
4019 B5
6001-1 D5
6001-2 D4
6002 B4
6010 B3
6011 B4
6012 B2
6013 B3
6014 D2
6015 E2
6016 E2
7010 B1
7011 C4
7012 B5
7013 C2
7014 C2
F010 E2
F011 E2
F012 E2
F013 E2
F014 E2
F015 E2
F016 E2

Personal Notes:

E_06532_012.eps
131004

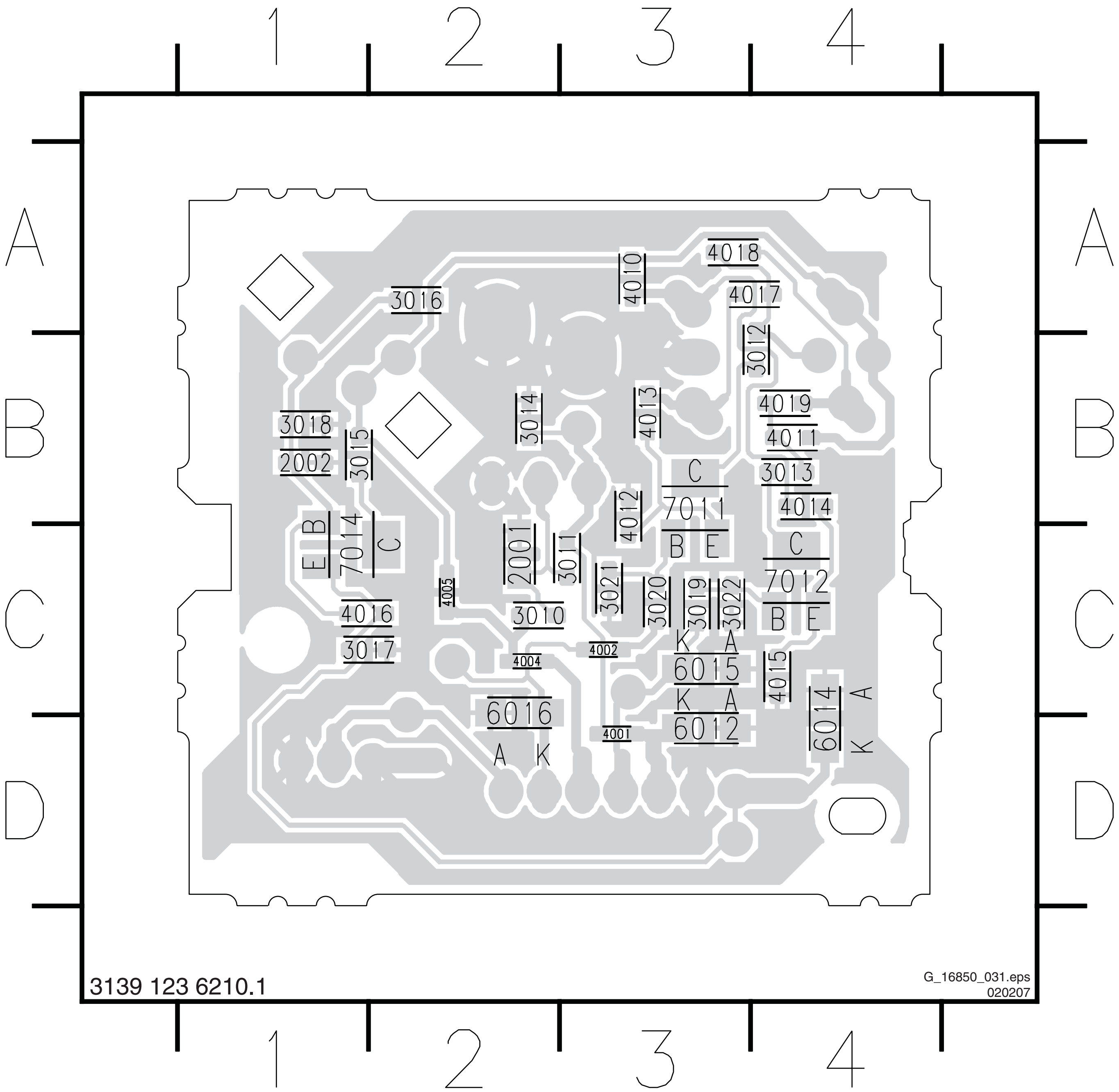
Layout Front IR / LED Panel (Top Side)

1M01	D4	6001	B2	6011	B1	7013	B4
1M20	D2	6002	B1	6013	A1		
1M21	D2	6010	B2	7010	A3		



Layout Front IR / LED Panel (Bottom Side)

2001	C2	3014	B2	3020	C3	4005	C2	4015	C4	6014	D4
2002	B1	3015	B1	3021	C3	4010	A3	4016	C1	6015	C3
3010	C2	3016	A2	3022	C3	4011	B4	4017	A4	6016	C2
3011	C3	3017	C1	4001	D3	4012	B3	4018	A3	7011	B3
3012	B4	3018	B1	4002	C3	4013	B3	4019	B4	7012	C4
3013	B4	3019	C3	4004	C2	4014	B4	6012	D3	7014	C1



Personal Notes:

E_06532_013.eps
131004

8. Alignments

Index of this chapter:

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

General: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage (depends on region):
  - AP-NTSC: 120 V_{AC} or 230 V_{AC} / 50 Hz (± 10%).
  - AP-PAL-multi: 120 - 230 V_{AC} / 50 Hz (± 10%).
  - EU: 230 V_{AC} / 50 Hz (± 10%).
  - LATAM-NTSC: 120 - 230 V_{AC} / 50 Hz (± 10%).
  - US: 120 V_{AC} / 60 Hz (± 10%).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 15 minutes.
- Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO_GND).
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

8.2 Hardware Alignments

There are no hardware alignments foreseen for this chassis, but below find an overview of the most important DC voltages on the SSB. These can be used for checking proper functioning of the DC/DC converters.

		Specifications (V)			
Description	Test Point	Min.	Typ.	Max.	Diagram
+AUDIO_POWER	FB21	11.40	12.00	12.60	B02_DC-DC
-AUDIO_POWER	FB23	-11.40	-12.00	-12.60	B02_DC-DC
+12V_DISP	FB34	11.40	12.00	12.60	B02_DC-DC
+8V	F401	7.60	8.00	8.40	B04C_Audio Proc.
+5V_STANDBY	FB27	4.94	5.20	5.46	B02_DC-DC
+5V_SW	FB16	4.93	5.19	5.45	B02_DC-DC
+5V_D	I411	4.75	5.00	5.25	B04C_Audio Proc.
+5V_AUD	I410	4.75	5.00	5.25	B04C_Audio Proc.
+5V_TUN	I115	4.75	5.00	5.25	B03_Tuner IF
+3V3_STBY	FB13	3.10	3.30	3.50	B02_DC-DC
+3V3_SW	FB17	3.1	3.3	3.5	B02_DC-DC
+3V3_MOJO	FB19	3.1	3.3	3.5	B02_DC-DC
+3V3	FJ01	3.2	3.27	3.4	B03F_DVB-MOJO
+3V3FE	FF14	3.2	3.27	3.4	B03B_DVB-Demod
+1V8S_SW	FB11	1.70	1.80	1.90	B02_DC-DC
+1V2_MOJO	FB20	1.18	1.25	1.31	B02_DC-DC
+1V2_CORE	FG39	1.14	1.24	1.34	B03D_DVB-MOJO
VDISP	F210	11.40	12.00	12.60	B04B_Video proc.

8.3 Software Alignments

With the software alignments of the Service Alignment Mode (SAM) the Tuner and RGB settings can be aligned.
To store the data: Use the RC button “Menu” to switch to the main menu and next, switch to “Stand-by” mode.

8.3.1 Tuner Adjustment (RF AGC Take Over Point)

Purpose: To keep the tuner output signal constant as the input signal amplitude varies.

The LC7.xx chassis comes with two tuner types: the UV1318S for the analogue sets (LC7.1x) and the TD1316AF for the hybrid sets (LC7.2x).

For the digital tuner TD1316AF, no alignment is necessary, as the AGC alignment is done automatically (standard value: “15”), even during analogue reception.

The analogue tuner UV1318S can also use the default value of “15”, however in case of problems use the following method (use multimeter and RF generator):

- Apply a vision IF carrier of 38.9 MHz (105 dBuV = 178 mVrms) to test point F111 (input via 50 ohm coaxial cable terminated with an RC network of series 10nF with 120 ohm to ground).
- Measure voltage on pin 1 of the tuner.
- Adjust AGC (via SAM menu: TUNER -> AGC), until voltage on pin 1 is 3.3 +0.5/-1.0 V.
- Store settings and quit SAM.

8.3.2 RGB Alignment

Before alignment, choose “TV MENU” -> “Picture” and set:

- “Brightness” to “50”.
- “Colour” to “50”.
- “Contrast” to “100”.

White Tone Alignment:

- Activate SAM.
- Select “RGB Align.” -> “White Tone” and choose a colour temperature.
- Use a 100% white screen as input signal and set the following values:
  - All “White point” values initial to “256”.
  - All “BlackL Offset” values to “0”.

In case you have a colour analyser:

- Measure with a calibrated (phosphor- independent) colour analyser (e.g. Minolta CA-210) in the centre of the screen. Consequently, the measurement needs to be done in a dark environment.
- Adjust the correct x,y coordinates (while holding one of the White point registers R, G or B on “256”) by means of decreasing the value of one or two other white points to the correct x,y coordinates (see table “White D alignment values”). Tolerance: dx: ± 0.004, dy: ± 0.004.
- Repeat this step for the other colour Temperatures that need to be aligned.
- When finished return to the SAM root menu and press STANDBY on the RC to store the aligned values to the NVM.

Table 8-1 White D alignment values

Value	Cool (11000 K)	Normal (9000 K)	Warm (6500 K)
x	0.278	0.289	0.314
y	0.278	0.291	0.319

If you do **not** have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production (statistics).

- Set the RED, GREEN and BLUE default values per temperature according to the values in the “Tint settings” table.

- When finished return to the SAM root menu and press STANDBY on the RC to store the aligned values to the NVM.

Table 8-2 Tint settings

Colour Temp.	R	G	B
Cool	249	241	246
Normal	251	238	229
Warm	246	222	199

Black Level Offset Alignment

- Activate SAM.
- Select “RGB Align.” -> “BlackL Offset” and choose a colour.
- Set all “BlackL Offset” values to “0”.
- When finished return to the SAM root menu and press STANDBY on the RC to store the aligned values to the NVM.

Note: For models with “Pixel Plus”, the “Black Offset” (black level offset) should NOT be changed in SAM. These offset values of RGB should be set to “0”, and should **NOT** be adjusted. Any adjustment of these values will affect the low light white balance.

ADC YPbPr Gray Scale Alignment

When the grey scale is not correct, use this alignment:

- Activate SAM.
- Select “NVM Editor”.
- Enter address “ 26(dec)” (ADR).
- Set value (VAL) to “197(dec) ± 25”.
- Store (STORE) the value.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I^2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence/absence of these specific ICs (or functions) is made known by the option codes.

Notes:

- After changing the option(s), save them with the STORE command.
- The new option setting becomes active after the TV is switched "off" and "on" again with the mains switch (the EAROM is then read again).

8.4.2 How To Set Option Codes

When the NVM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set all option numbers. You can find the correct option numbers in table “Option Codes OP1...OP7“ below.

How to Change Options Codes

An option code (or “option byte”) represents eight different options (bits). When you change these numbers directly, you can set all options very quickly. All options are controlled via seven option numbers (OP1... OP7).

Activate SAM and select “Options”. Now you can select the option byte (OP1.. OP7) with the CURSOR UP/ DOWN keys, and enter the new 3 digit (decimal) value. For the correct factory default settings, see the table “Option codes OP1...OP7“ below. For more detailed information, see the second table “Option codes at bit level“. If an option is set (value “1”), it represents a certain decimal value.

When all the correct options (bits) are set, the sum of the decimal values of each Option Byte (OP) will give the option code.

Sets 12NC	Sets Type	Panel Type	Panel Code (Dec)	Option Byte						
LC07_EU_ATV_LCD_Europe (/10)				Group 1				Group 2		
				1	2	3	4	5	6	7
867000025487	26PFL5322/10	LPL : LC260WX2-SLB2	045	003	023	010	223	009	000	000
		CMO : V260B1-L03	068							
		AUO : T260XW03 V1	067							
867000025408	32PFL5322/10	LPL : LC320W01-SL06	046							001
		AUO : T315XW02 VD	091							
		CMO : V315B1-L05	069							
867000025489	37PFL5322/10	LPL : LC370WX1-SLB1	071							002
		AUO : T370XW02 V5	072							
867000025492	42PFL5322/10	LPL : LC420WX3-SLA1	073							
		AUO : T420XW01 V8	076							
		LPL : LC420WX5-SLD1	107							
LC07_EU_ATV_LCD_Pan Europe (/12)										
867000025488	26PFL5322/12	LPL : LC260WX2-SLB2	045	003	023	010	223	009	000	000
		CMO : V260B1-L03	068							
		AUO : T260XW03 V1	067							
867000025439	32PFL5322/12	LPL : LC320W01-SL06	046							001
		AUO : T315XW02 VD	091							
		CMO : V315B1-L05	069							
867000025491	37PFL5322/12	LPL : LC370WX1-SLB1	071							002
		AUO : T370XW02 V5	072							
867000025493	42PFL5322/12	LPL : LC420WX3-SLA1	073							
		AUO : T420XW01 V8	076							
		LPL : LC420WX5-SLD1	107							
LC07_EU_ATV_PDP_Europe (/10)										
867000025494	42PFP5332/10	SDI : 42 HD W2	083	003	007	011	223	009	000	003
		LG : 42 HD X4	084							
LC07_EU_ATV_PDP_Pan Europe (/12)										
867000025495	42PFP5332/12	SDI : 42 HD W2	083	003	007	011	223	009	000	003
		LG : 42 HD X4	084							

H_16940_006.eps
090307

Figure 8-1 Option codes OP1...OP7 (for all LC7.1E models)

Option Bit Overview

Below find an overview of the Option Codes on **bit** level.

Table 8-3 Option codes at bit level (OP1-OP4)

Option Byte & Bit	Dec. Value	Option Name	Description
Byte OP1			
Bit 7 (MSB)	128	Reserved	Not Used (Reserved)
Bit 6	64	CHINA	ON = SW is for CHINA only OFF = SW is for Non-China AP cluster
Bit 5	32	DTV_CHINA	ON = DTV_CHINA will be available (Reserved) OFF = DTV_CHINA will not be available
Bit 4	16	DTV_EU	ON = DTV will be available OFF = DTV will not be available
Bit 3	8	UK_PNP	ON = UK PNP is available OFF = UK PNP is not available
Bit 2	4	VIRGIN_MODE	ON = Virgin Mode (PNP) is available OFF = Virgin Mode (PNP) is not available
Bit 1	2	ACI	ON = ACI is available OFF = ACI is not available
Bit 0 (LSB)	1	ATS	ON = ATS is available OFF = ATS is not available
Total DEC Value			
Byte OP2			
Bit 7 (MSB)	128	1080P	ON = 1080p is available OFF = 1080p is not available
Bit 6	64	LIGHT_SENSOR	ON = Light Sensor is available OFF = Light Sensor is not available
Bit 5	32	AMBILIGHT	ON = Ambilight Feature will be available OFF = Ambilight Feature will not be available
Bit 4	16	BACKLIGHT_DIMMING	ON = Backlight Dimming is available OFF = Backlight Dimming is not available
Bit 3	8	HUE	ON = Hue is available OFF = Hue is not available
Bit 2	4	2D3DCF	ON = 3D Comb Filter is available OFF = 2D Comb Filter is available
Bit 1	2	WSSB	ON = WSS is available OFF = WSS is not available
Bit 0 (LSB)	1	WIDE_SCREEN	ON = TV is 16x9 set OFF = TV is 4x3 set
Total DEC Value			
Byte OP3			
Bit 7 (MSB)	128	CVI2	ON=CVI1 (YPbPr) (For ROW)
Bit 6	64	Reserved	Not Used (Reserved)
Bit 5	32	Reserved	Not Used (Reserved)
Bit 4	16	VCHIP	ON = VChip is available OFF = VChip is not available
Bit 3	8	VIDEO_TEXT	ON = Video-TXT is available OFF = Video-TXT is not available
Bit 2	4	STEREO_DBX	ON = Stereo DBX detection is available (LATAM) OFF = Stereo DBX detection is not available
Bit 1	2	STEREO_NICAM_2CS	ON = Stereo NICAM 2CS detection is available (EU/AP/China) OFF = Stereo NICAM 2CS detection is not available
Bit 0 (LSB)	1	LIP_SYNC	ON = Lip Sync is available OFF = Lip Sync is not available
Total DEC Value			
Byte OP4			
Bit 7 (MSB)	128	HDMI2	ON = HDMI2 is available OFF = HDMI2 is not available
Bit 6	64	HDMI1	ON = HDMI1 is available OFF = HDMI1 is not available
Bit 5	32	VGA	ON = VGA is available OFF = VGA is not available
Bit 4	16	SVHS3	ON = SVHS3 is available OFF = SVHS3 is not available
Bit 3	8	AV3	ON = AV3 is available OFF = AV3 is not available
Bit 2	4	CVI	ON = CVI is available OFF = CVI is not available
Bit 1	2	SVHS2	ON = SVHS2 is available OFF = SVHS2 is not available
Bit 0 (LSB)	1	AV2	ON = AV2 is available OFF = AV2 is not available
Total DEC Value			

Table 8-4 Option codes at bit level (OP5-OP7)

Option Byte & Bit	Dec. Value	Option Name	Description
Byte OP5			
Bit 7 (MSB)	128	NVM_CHECK	ON = NVM (range) checking is available OFF = NVM (range) checking is not available
Bit 6	64	Reserved	Not Used (Reserved)
Bit 5	32	Reserved	Not Used (Reserved)
Bit 4	16	MP_ALIGN	ON = Using multi-point alignment for Gamma & White Point OFF = Using old way for Gamma (pre-defined) & WP alignment
Bit 3	8	SYS_RECVRY	ON = System Recovery is available OFF = System Recovery is not available
Bit 2	4	SL_WIRED	ON = BDS Smart Loader Wired is available OFF = BDS Smart Loader Wired is not available
Bit 1	2	HOTEL	ON = Hotel/BDS is available OFF = Hotel/BDS is not available
Bit 0 (LSB)	1	SS_DEMO	ON = Split Screen Demo is available OFF = Split Screen is not available
Total DEC Value			
Byte OP6			
Bit 7 (MSB)	128	Reserved	Not Used (Reserved)
Bit 6	64	Reserved	Not Used (Reserved)
Bit 5	32	Reserved	Not Used (Reserved)
Bit 4	16	Reserved	Not Used (Reserved)
Bit 3	8	TUNER PROFILE	0 = ATV_EU_PHILIPS UV1318S/AIH-3 1 = ATV_EU_Panasonic EN57K28G3F2 = DTV_EU_PHILIPS TD1316AF/IHP-24 = ATV_AP_PHILIPS UV1316E/AIH-45 = ATV_AP_Tuner2 (Reserved)6 = ATV_CHINA_ALPS TEDE9-286B7 = ATV_CHINA_Tuner2 (Reserved)8 = ATV_LATAM_PHILIPS UV1338/AIH-4 9 = ATV_LATAM_Tuner2 (Reserved)10 = DTV_CHINA_Tuner1 (Reserved)11 = DTV_CHINA_Tuner2 (Reserved)12 = Not Used (Reserved)13 = Not Used (Reserved)14 = Not Used (Reserved)15 = Not Used (Reserved)
Bit 2	4		
Bit 1	2		
Bit 0 (LSB)	1		
Total DEC Value			
Byte OP7			
Bit 7 (MSB)	128	Reserved	Not Used (Reserved)
Bit 6	64	Reserved	Not Used (Reserved)
Bit 5	32	Reserved	Not Used (Reserved)
Bit 4	16	CABINET PROFILE	0 = Cabinet_Profile_26_LCD_ME7 1 = Cabinet_Profile_32_LCD_ME7 2 = Cabinet_Profile_37_42_47_LCD_ME73 = Cabinet_Profile_42_50_PDP_ME7 4 = Cabinet_Profile_26_LCD_ME5P5 - 32 = Reserved
Bit 3	8		
Bit 2	4		
Bit 1	2		
Bit 0 (LSB)	1		
Total DEC Value			

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the Wiring, Block (chapter 6) and Circuit Diagrams (chapter 7). Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

The LC7.x (development name "LC07") is a new global chassis for the year 2007 (LC7.1 is the analogue range, LC7.2 is the digital range). It covers a screen size of 26 to 47 inch for LCD and 42 to 50 inch for Plasma sets with a new styling called "ME7". Some key components are:

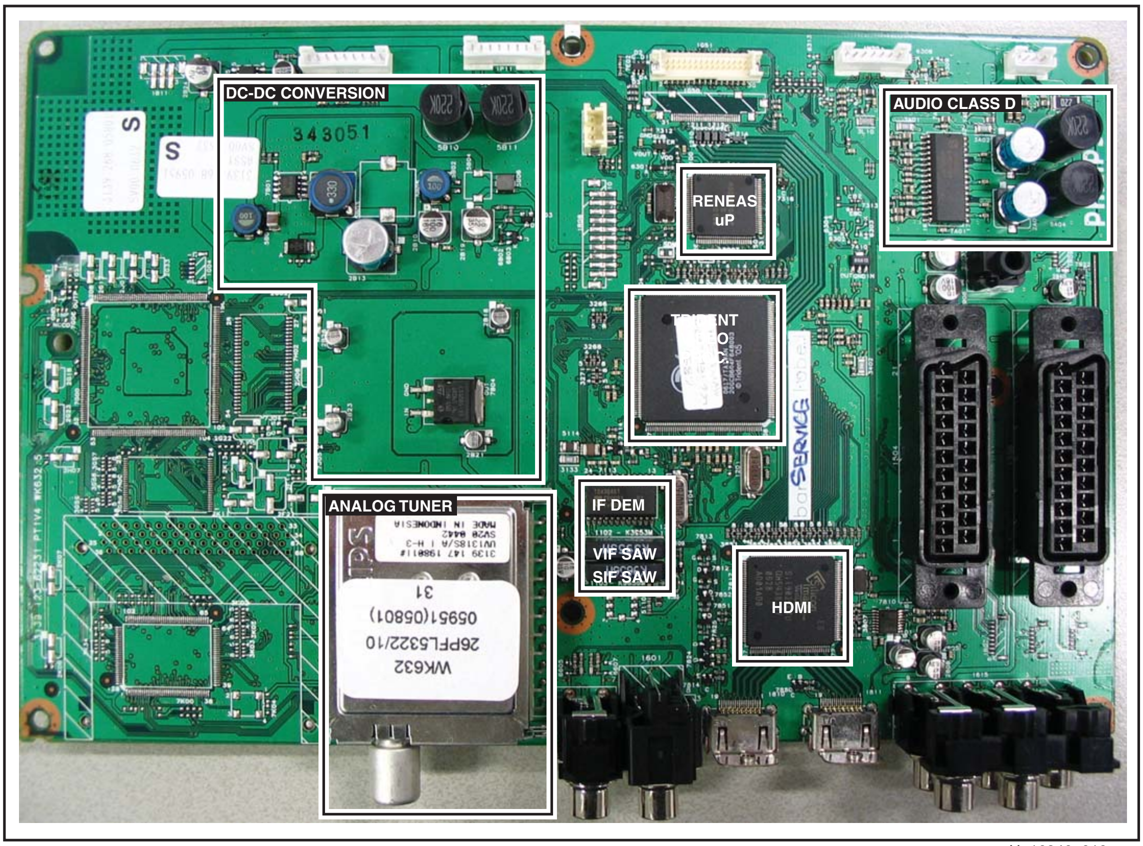
- **Audio**: Sound processing is performed by a multi-standard sound processor MSP4450 (item 7411)
- **Video**: Video processing is performed by the Trident video processor SVP CV32-LF (item 7202).

For analogue reception, a standard IF demodulator is used, whereas digital input signals (DVB-T) are processed through a COFDM channel decoder together with an MPEG decoder. A so-called "Reneas" microprocessor performs the control functionality.

Important features of this chassis are:

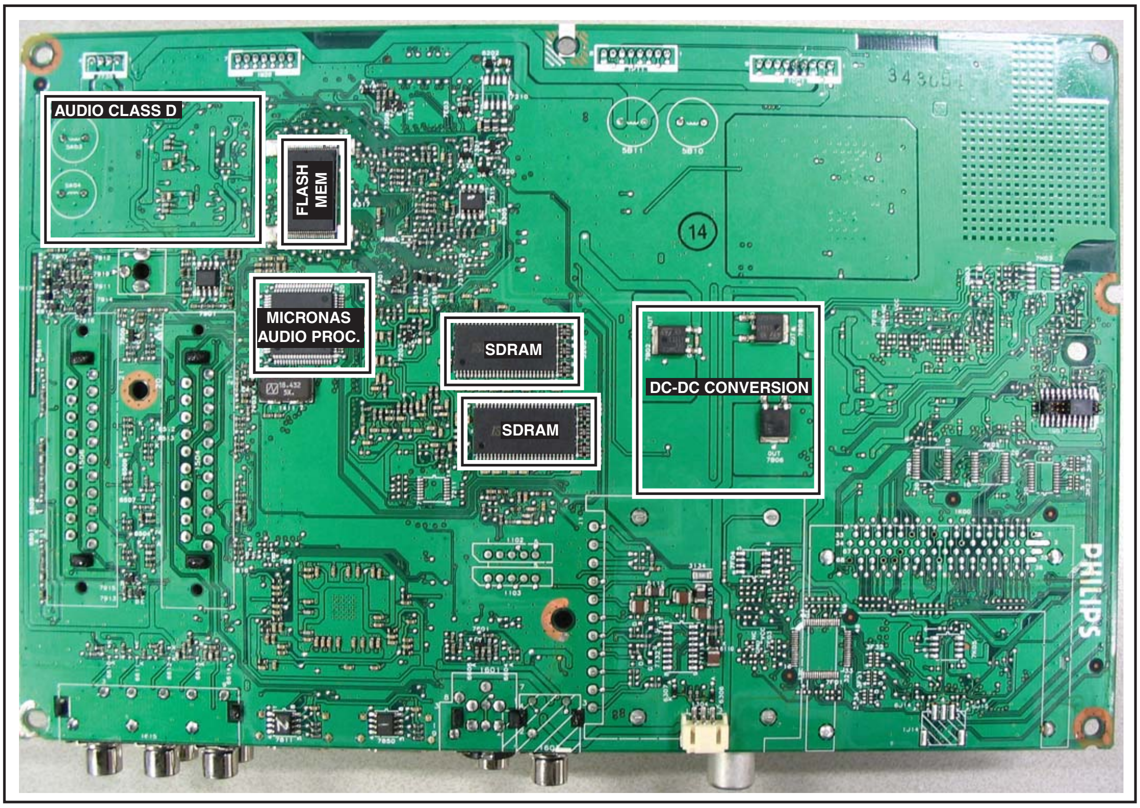
- **AmbiLight:** LED AmbiLight (where applicable) is introduced as the successor of glass-tube AmbiLight
- **1080p Full HD** (where applicable).

9.1.1 SSB Cell Layout



H_16940_010.eps
060307

Figure 9-1 SSB top view



H_16940_011.eps
060307

Figure 9-2 SSB bottom view

9.2 LCD Power Supply

The Power Supply Unit (PSU) in this chassis is a buy-in and is a black-box for Service. When defective, a new panel must be ordered and the defective panel must be sent for repair, unless the main fuse of the unit is broken. Always replace the fuse with one with the correct specifications! This part is available in the regular market.

Three different PSU can be used in this chassis:

- 26 and 32 inch sets use a “Delta” PSU
- 37 and 42 inch sets use a “PPS” (Philips Power Solutions) PSU
- 47 inch sets use a “Delta” PSU.

Figure “Overview of PSU connectivity” shows the connectivity of the Power Supply Unit with the other panels in the set.

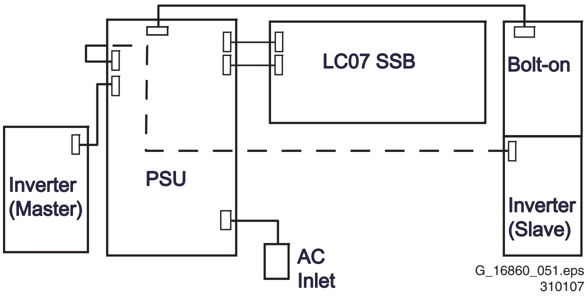


Figure 9-3 Overview of PSU connectivity

All Power Supply Units deliver the following voltages to the chassis:

- +24 V to the inverters
- +12 V to SSB
- +12 V and -12 V to Audio Supply
- 12 V to Bolt-on Supply (where applicable)
- +5.2 V Standby voltage.

9.3 DC/DC converters

A switch generates the +5.2 V (+5V_SW) from the +5.2 V (+5V_STANDBY) supply voltage. For LCD sets, this switch is mounted on-board the SSB. For PDP sets, this switch is mounted on the Power Supply Panel. This results in the +5V_STANDBY (and +5V_SW for PDP sets) voltage(s), coming from the Power Supply Unit, is (are) used as input for the on-board DC/DC converters.
They deliver the following voltages to the board:

- +3.3 V (+3V3_STBY)
- +5.2 V (+5V_SW) (only for LCD sets)
- +1.8 V (+1V8S_SW)
- +34 V (+VTUN)
- +3.3 V (+3V3_SW)
- +3.3 V (+3V3_MOJO)
- +1.2 V (+1V2_MOJO)

An overview can be found in figure “DC-DC converter block diagram”.

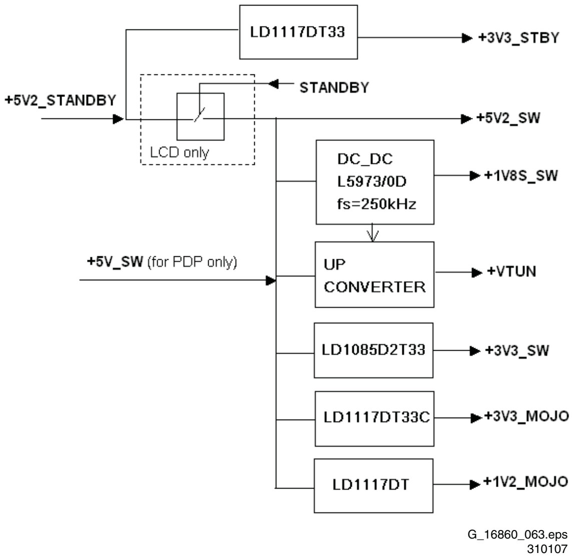


Figure 9-4 DC-DC converter block diagram

9.4 Front-End

This chassis uses different tuners depending on the region and execution. An overview of the different executions can be found in table “Tuner diversity”.

Table 9-1 Tuner diversity

Region	Tuner	Type
Europe	TD1316AF	hybrid
	UV1318S	analogue
AP	UV1316E	analogue
China	TEDE9	analogue
Latam	UV1338	analogue

For a general outline of tuner applications in this chassis see figure “Tuner IF diagram”.

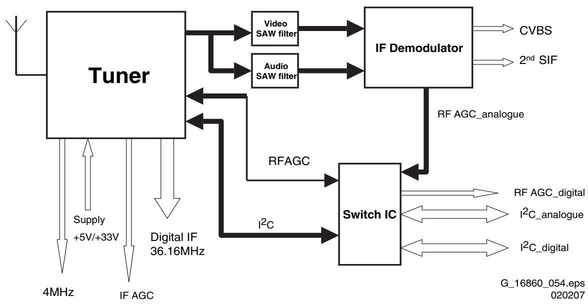


Figure 9-5 Tuner IF diagram

In the LC7.1x chassis (analogue sets), the signal coming from the tuner is fed to the IF demodulator (through the SAW filters) and then passed to the Trident Video Processor.

In the LC7.2x chassis (digital sets), the TD1316AF hybrid tuner is used which is capable of receiving both analogue and digital (DVB-T) signals. While receiving analogue signals, the signal coming from the tuner is fed to the IF demodulator (through the SAW filters) and then passed to the Trident Video Processor. While receiving digital signals, the signal coming from the tuner is first fed to the channel decoder, then to the MPEG decoder and then to the Trident Video Processor.

9.4.1 Video IF Amplifier

The IF-filter is integrated in a SAW (Surface Acoustic Wave) filter. One for filtering IF-video (item 1102) and one for IF-audio (item 1103). The type of these filters depends on the standard(s) received (region-dependency). Some filters can be switched to another standard, what makes them suitable for applications in multi-standard platforms. An overview of the SAW filter diversity can be found in table “SAW filter diversity”.

Table 9-2 SAW filter diversity

SAW filter	Switching Y/N	Region	Video/Audio
OFWK3953M	No	Europe	Video
OFWK9656M	Yes	Europe	Audio
OFWK7265L	Yes	AP	Video
OFWK9361L	No	AP	Sound
OFWK3956L	No	China	Video
OFWK3955L	No	China	Video
OFWK9352L	No	China	Audio
OFWM1967L	No	LATAM	Video/Audio

Switching is done by the microcontroller via SAW_SW. In table “SAW filter switching” is explained how to address the different system standards.

Table 9-3 SAW filter switching

Region	SAW_SW	System
Europe	1	L’
	0	other systems
AP	1	B/G, D/K, I
	0	M/N
China	1	B/G, D/K, I
	0	M/N
LATAM	n.a.	M/N

The hybrid tuner TDA1316AF, used in Europe sets, needs to be switched between digital and analogue mode. This is done by the microcontroller via DVB_SW. Refer to table “Hybrid tuner digital/analogue switching” for details.

Table 9-4 Hybrid tuner digital/analogue switching

Region	DVB_SW	Mode
Europe	1	analogue reception
	0	Digital reception

The pin assignment of all analogue tuners is equal and can be found in table “Pin assignment analogue tuners”.

Table 9-5 Pin assignment analogue tuners

Pin number	Description	DC voltage (V)
1	RF AGC voltage	3.3 - 4.5 (weak or no signal) < 3.3 (strong signal)
2	n.c.	
3	I^2C-bus address select	0
4	SCL	0 to 3.3
5	SDA	0 to 3.3
6	n.c.	
7	supply voltage	5 ±0.25
8	n.c.	
9	tuning supply voltage	33
10	n.c.	
11	TV IF output	

The pin assignment of the hybrid tuner can be found in table “Pin assignment hybrid tuner”.

Table 9-6 Pin assignment hybrid tuner

Pin number	Description	DC voltage (V)
1	n.c.	
2	RF AGC voltage	3.3 - 4.5 (weak or no signal) < 3.3 (strong signal)
3	I^2C-bus address select	0
4	SCL	0 to 3.3
5	SDA	0 to 3.3
6	4 MHz reference output	
7	supply voltage	5 ±0.25
8	broadband IF output	
9	IF AGC voltage	0 to 3
10	narrowband IF output	
11	narrowband IF output	

9.4.2 Automatic Gain Control

In the LC7.2x chassis (digital sets), the automatic gain control depends on if the set is receiving a digital or an analogue signal. During analogue reception, the hybrid tuner receives an external AGC voltage, coming from the demodulator, to perform automatic gain control. During digital reception, no external AGC voltage is used but the tuners internal AGC loop is used.

In the LC7.1x chassis (analogue sets), the tuner receives an external AGC voltage, coming from the demodulator, to perform automatic gain control.

9.5 Video Processing

The video processing is completely handled by the Trident SVP CX32 video processor which features:

- CVBS-input for analogue signals
- RGB-input for digital (DVB-T) signals
- Motion and “edge-adaptive” deinterlacing
- Integrated ADC
- Built-in 8-bit LVDS transmitter
- Colour stretch
- Skin colour enhancement
- 3D Digital Comb Video Decoder
- Interlaced and Progressive Scan refresh
- Teletext decoding
- OSD and VBI/Closed Caption.

9.5.1 Region-dependent applications

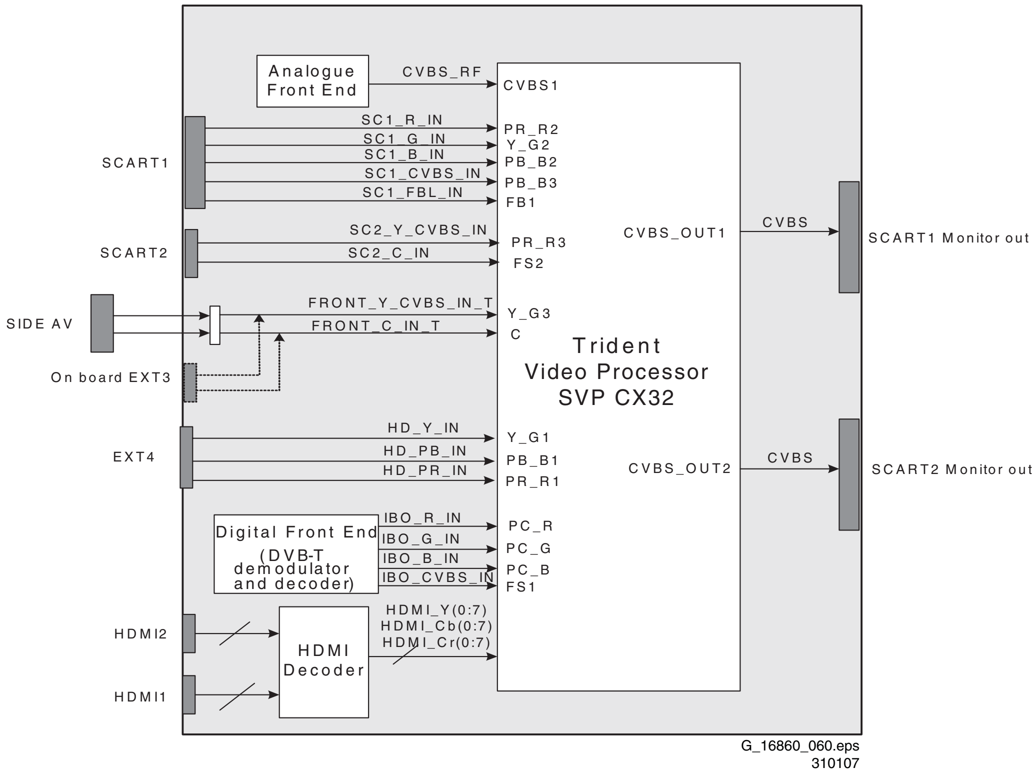


Figure 9-6 Block diagram video processing - EU version

“Block diagram video processing - EU version” shows the input and output signals to and from the Trident Video Processor in EU applications.

During analogue reception, a CVBS signal coming from the analogue front-end is fed to the video processor via pin CVBS1. During digital reception, the video signal coming from the MPEG decoder (MOJO) is fed to the video processor via pins FS1, PC_B, PC_G and PC_R.

The video processor also interfaces the SCART1 & 2 input, side AV, EXT4 (HD where applicable) and HDMI1 & 2 input. Through the SCART1 & 2 connectors, a monitor output is foreseen.

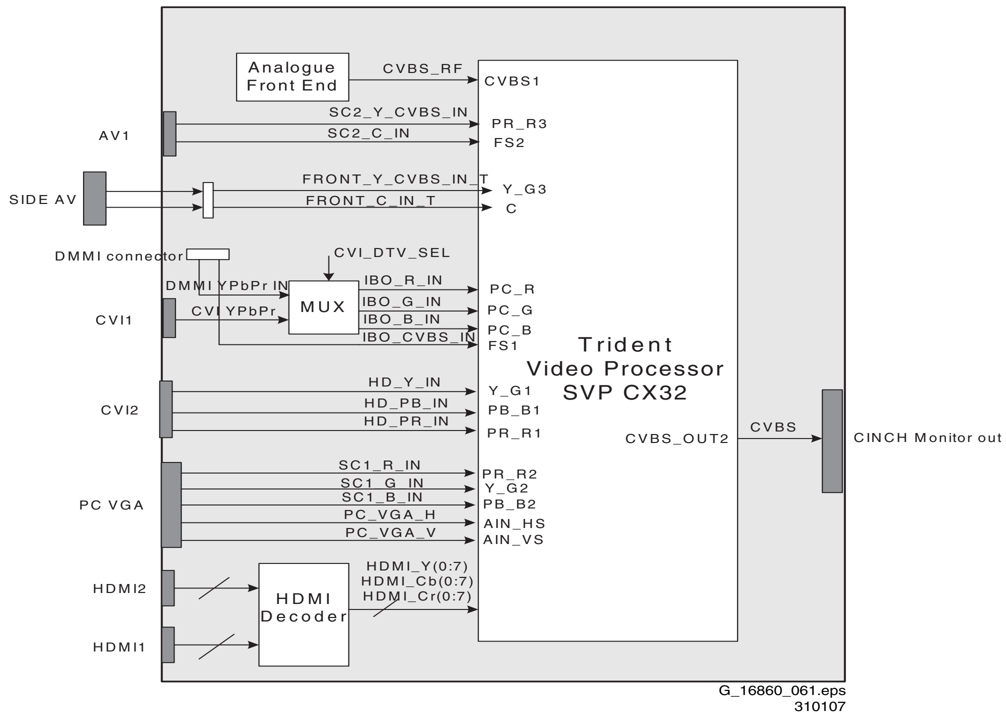


Figure 9-7 Block diagram video processing - AP version

"Block diagram video processing - AP version" shows the input and output signals to and from the Trident Video Processor in AP applications.

During analogue reception, a CVBS signal coming from the analogue front-end is fed to the video processor via pin CVBS1. No digital reception (DVB-T) reception is foreseen in AP region. However, an internal DMMI connector is implemented for future digital reception applications in combination with IBO. CVI_DTV_SEL is a control signal from the microprocessor. When this signal is LOW, then the MUX passes the CVI1 YPbPr input signal to the Trident Video Processor. When this signal is HIGH, then the YPbPr input signal coming from the DMMI connector is passed to the video processor. Currently, this signal is always LOW since no IBO is used.

The video processor also interfaces the AV1 and Side AV input, CVI2 (HD), VGA(PC), HDMI1 & 2. A cinch output connector for Monitor output is foreseen.

9.6 Memory addressing

Figure "Memory block diagram" shows the interconnection between the microprocessor, the FLASH memory, the Trident Video Processor and the SDRAM.

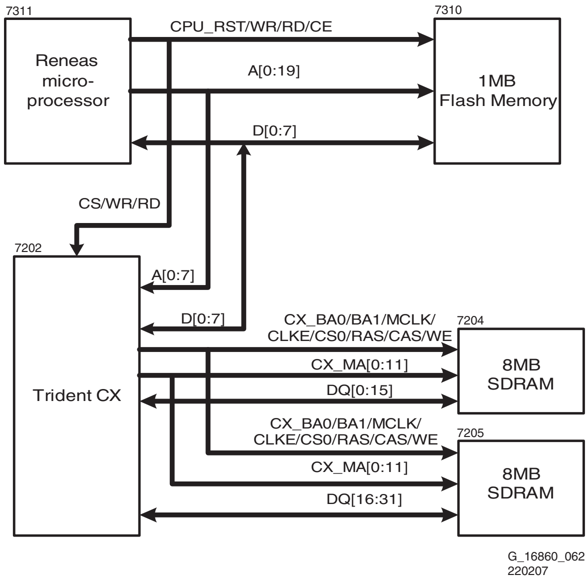


Figure 9-8 Memory block diagram

Control signals CPU_RST, WR, RD and CE, address lines A[0:19] and data lines D[0:7] are used for transferring data between the microprocessor (item 7311) and the flash memory (item 7310). Control signals CS, WR and RD, address lines A[0:7] and data lines D[0:7] are used for transferring data between the Trident Video Processor (item 7202) and the microprocessor (item 7311). Control signals CX_BA0, CX_BA1, CX_MCLK, CX_CLKE, CX_CS0, CX_RAS, CX_CAS and CX_WE, address lines CX_MA[0:11] and data lines DQ[0:15] are used for transferring data between the Trident Video Processor and the SDRAM ICs (items 7204 and 7205).

9.7 Audio Processing

The audio decoding is done entirely via the Multistandard Sound Processor (MSP) 4450P (item 7411).
This processor covers the processing of both analogue and (NICAM) digital input signals by processing the (analogue) IF signal-in to processed (analogue) AF-out (baseband audio). An internal 40 ms (stereo) audio delay line (LIP SYNC) is foreseen and therefore no external delay line is necessary.

All internal clock signals are derived from an external 18.432 MHz oscillator, which, in NICAM or I^2S-mode, on its turn is locked to the corresponding source.

The following functionality is included:
- Automatic Standard Detection (ASD) automatically detects the actual broadcasted TV standard
- Automatic Sound Select (ASS) automatically switches (without any I^2C-bus action) between mono/stereo/ bilingual mode when the broadcast mode changes.

9.7.1 Region-dependent applications

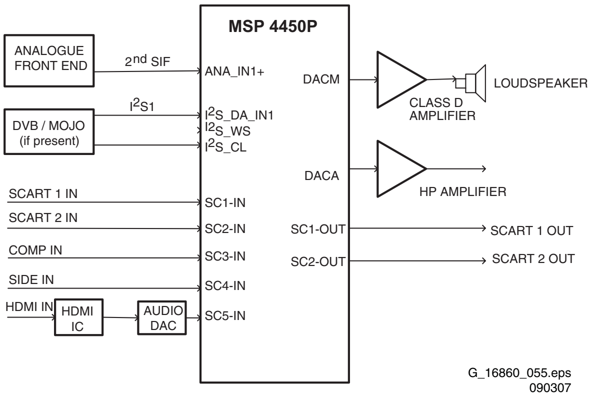


Figure 9-9 Block diagram audio processing - EU application

In EU applications, the MSP features:
- Sound IF input for signals coming from the analogue front-end
- Three I^2S-inputs for signals ("DATA", "CLK" and "WS") coming from the MOJO in case of digital reception
- Five analogue inputs: for EXT1 to EXT4 and HDMI
- Loudspeaker output path
- Headphone output path
- SCART-1 output path (RF)
- SCART-2 output path (WYSIWYG = monitor).

Digital audio signals coming from HDMI sources are fed to a digital-to-analogue converter and then fed to the MSP.
In case of reception of digital TV signals, digital audio signals coming from the MOJO are directly fed to the MSP via the I2S_DA_IN1, I2S_WS1 and I2S_CL1 lines. This ensures a "true digital path".

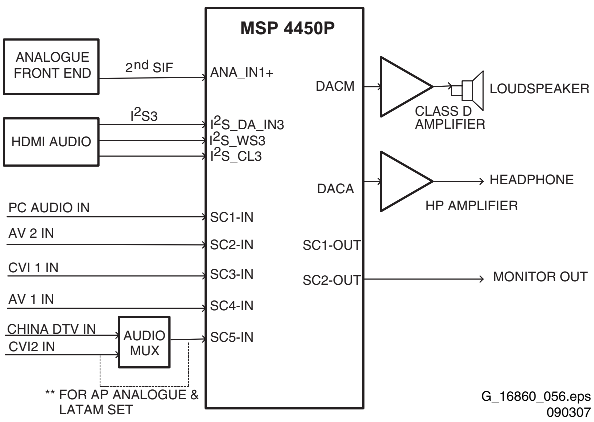


Figure 9-10 Block diagram audio processing - AP application

In AP applications, the MSP features:
- Sound IF input for signals coming from the analogue front-end

- Three I²S-inputs for signals (“DATA”, “CLK” and “WS”) coming from the HDMI interface
- Five analogue inputs: for CVI1, CVI2, AV1, AV2, DTV (China) and PC audio
- Loudspeaker output path
- Headphone output path
- Monitor output path (WYSIWYG).

Digital audio signals coming from HDMI sources are directly fed to the MSP via the I2S_DA_IN3, I2S_WS3 and I2S_CL3 lines. This ensures a “true digital path”.
In case of reception of digital TV signals, a multiplexer is used to switch between China DTV or DVI2 audio. In China sets, the audio signal coming from the DTV module is in analogue format. The output from the multiplexer is fed to the MSP via the SC5-input.

In both applications, the microprocessor (item 7311) controls the audio part with the following control lines:

- MUTEn: used to mute the Class D amplifiers
- ANTI_PLOP: used to detect any DC failure in the Class D amplifiers
- DC_PROT: used to detect any DC failure in the Class D amplifiers.

9.7.2 Audio Amplifier

The audio amplifier is an integrated class-D amplifier (TDA8932T, item 7A01). It combines a good performance with a high efficiency, resulting in a big reduction in heat generation.

Principle

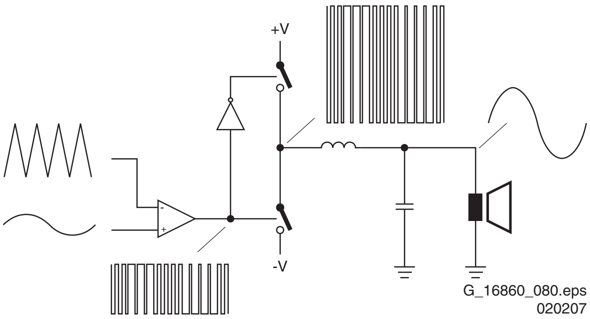


Figure 9-11 Principle Class-D Amplifier

The Class D amplifier works by varying the duty cycle of a Pulse Width Modulated (PWM) signal.
By comparing the input voltage to a triangle wave, the amplifier increases duty cycle to increase output voltage, and decreases duty cycle to decrease output voltage.
The output transistors of a Class D amplifier switch from 'full off' to 'full on' (saturated) and then back again, spending very little time in the linear region in between. Therefore, very little power is lost to heat. If the transistors have a low 'on' resistance (RDS(ON)), little voltage is dropped across them, further reducing losses.
A Low Pass Filter at the output passes only the average of the output wave, which is an amplified version of the input signal. In order to keep the distortion low, negative feedback is applied.

The **advantage** of Class D is increased efficiency (= less heat dissipation). Class D amplifiers can drive the same output power as a Class AB amplifier using less supply current.
The **disadvantag**e is the large output filter. The main reason for this filter is that the switching waveform results in maximum current flow. This causes more loss in the load, which causes lower efficiency. An LC filter with a cut-off frequency less than the Class D switching frequency, allows the switching current to flow through the filter instead of the load, thus reducing the overall loss and increasing the efficiency.

DC-protection

A DC-detection circuit is foreseen to protect the speakers. It is built around three transistors (items 7A05 to 7A07) and generates a protection signal (DC_PROT) to the microprocessor in case of a DC failure in the Class D amplifiers.

9.8 HDMI

9.8.1 Introduction

Note: Text below is an excerpt from the ”HDMI Specification” that is issued by the HDMI founders (see *http://www.hdmi.org*).

The High-Definition Multimedia Interface is developed for transmitting digital signals from DVD players, set-top boxes and other audiovisual sources to television sets, projectors and other video displays.
HDMI can carry high quality multi-channel audio data and can carry all standard and high-definition consumer electronics video formats. Content protection technology is available.
HDMI can also carry control and status information in both directions.

HDMI is backward compatible with DVI (1.0). Compared with DVI, HDMI offers extra:

- YUV 4:4:4 (3 x 8-bit) or 4:2:2 (up to 2 x 12-bit), where DVI offers only RGB 4:4:4 (3 x 8 bit).
- Digital audio in CD quality (16-bit, 32/44.1/48 kHz), higher quality available (8 channels, 192 kHz).
- Remote control via CEC bus (Consumer Electronics Control): allows user to control all HDMI devices with the TV's remote control and menus.
- Smaller connector (SCART successor).
- Less cables: e.g. from 10 audio/9 video cables to 3 HDMI cables.

9.8.2 Implementation

The IC used is the Sil 9025 (Silicon Image) third generation HDMI receiver, item 7817 on the SSB.

It has the following features:

- Dual HDMI input connector
- Two EEPROMS to support EDID
- HDMI audio
- I²S output to low-cost DACs which operate at a frequency of 32 to 192 kHz
- Integrated HDCP decryption engine
- Built-in pre-programmed HDCP keys for highest level of copy-protection security
- Colour space conversion RGB to YCbCr
- “Hot Plug Reset” signal.

Figure “HDMI implementation” shows the HDMI configuration in this chassis.

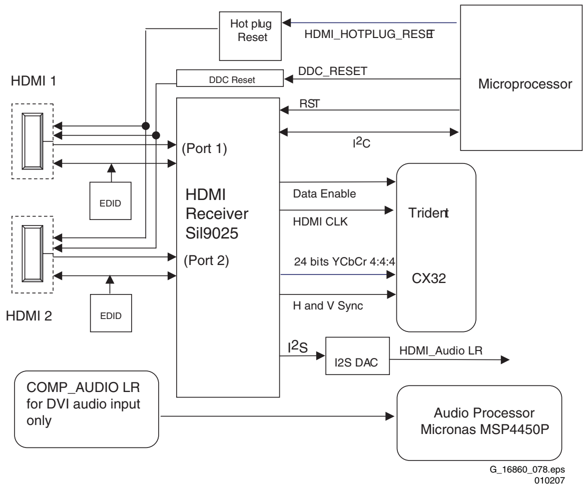


Figure 9-12 HDMI implementation

HDMI connectors 1 and 2 are connected to resp. ports 1 and 2 of the HDMI receiver. The ports cannot be activated at the same moment. Switching is controlled by software.
“Hot Plug Reset” and “DDC Reset” are controlled by the microprocessor.

The HDMI receiver will convert all RGB or YCbCr 4:2:2 signals to 24-bit YCbCr 4:4:4. When it receives a YCbCr 4:4:4 signal it will just pass the signal directly to the Trident Video Processor.

9.9 Abbreviation List

1080i	1080 visible lines, interlaced
1080p	1080 visible lines, progressive scan
2CS	2 Carrier Sound
2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeping up the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AUO	Acer Unipack Optronics
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASD	Automatic Standard Detection
AV	Audio Video
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BTSC	Broadcast Television System Committee
CAM	Conditional Access Module
CBA	Circuit Board Assembly (or PWB)
CEC	Consumer Electronics Control bus; remote control bus on HDMI connections
CI	Common Interface; E.g PCMCIA slot for a CAM in a set top box
CL	Constant Level: audio output to connect with an external amplifier
CLUT	Colour Look Up Table
ComPair	Computer aided rePair
COFDM	Coded Orthogonal Frequency Division Multiplexing; A multiplexing technique that distributes the data to be transmitted over many carriers
CSM	Customer Service Mode
CVBS	Composite Video Blanking and Synchronisation
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS terrestrial out
CVI	Component Video Input
DAC	Digital to analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DDC	Display Data Channel; is a part of the "Plug and Play" feature
DFU	Directions For Use: owner's manual
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DST	Dealer Service Tool: special (European) remote control designed for service technicians
DTS	Digital Theatre Sound
DVB(T)	Digital Video Broadcast; An MPEG2 based standard for transmitting digital audio and video. T= Terrestrial
DVD	Digital Versatile Disc
DVI	Digital Visual Interface
DW	Double Window

ED	Enhanced Definition: 480p, 576p
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EU	EUrope
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-TXT	Fast Blanking Teletext
FLASH	FLASH memory
FM	Field Memory / Frequency Modulation
FMR	FM Radio
FRC	Frame Rate Converter
FTV	Flat TeleVision
H	H_sync to the module
HD	High Definition: 720p, 1080i, 1080p
HDCP	High-bandwidth Digital Content Protection; A "key" encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a "snow vision" mode or changed to a low resolution. For normal content distribution, the source and the display device must be enabled for HDCP "software key" decoding
HDMI	High Definition Multimedia Interface, digital audio and video interface
HP	Head Phone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
I2S	Integrated IC Sound bus
IBO(Z)	Intelligent Bolt On module. Z= Zapper; module for DVB reception.
IC	Integrated Circuit
IF	Intermediate Frequency
IR	Infra Red
IRQ	Interrupt ReQuest
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LATAM	LATin AMerica
LC07	Philips chassis name for LCD TV 2007 project
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LPL	LG Philips LCD
LS	Loud Speaker
LVDS	Low Voltage Differential Signalling, data transmission system for high speed and low EMI communication.
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MPEG	Motion Pictures Experts Group
MSP	Multi-standard Sound Processor: ITT sound decoder
MUTE	MUTE Line
NAFTA	North American Free Trade Association: Trade agreement between Canada, USA and Mexico
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, used mainly in Europe.
NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non Volatile Memory: IC containing TV related data (for example, options)
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED
OAD	Over the Air Download
OSD	On Screen Display
PAL	Phase Alternating Line. Colour system used mainly in Western Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
PC	Personal Computer
PCB	Printed Circuit Board (or PWB)
PDP	Plasma Display Panel
PIG	Picture In Graphic
PIP	Picture In Picture
PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
PSU	Power Supply Unit
PWB	Printed Wiring Board (or PCB)
RAM	Random Access Memory
RC	Remote Control transmitter
RC5 (6)	Remote Control system 5 (6), the signal from the remote control receiver
RF	Radio Frequency
RGB	Red, Green, and Blue. The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced.
RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
ROM	Read Only Memory
SAM	Service Alignment Mode
SC	SandCastle: two-level pulse derived from sync signals
SC1-OUT	SCART output of the MSP audio IC
SC2-OUT	SCART output of the MSP audio IC
S/C	Short Circuit
SCL	Clock signal on I2C bus
SD	Standard Definition: 480i, 576i
SDA	Data signal on I2C bus
SDI	Samsung Display Industry
SDM	Service Default Mode
SDRAM	Synchronous DRAM
SECAM	SEequence Couleur Avec Memoire. Colour system used mainly in France and Eastern Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switch Mode Power Supply
SND	SouND
SOPS	Self Oscillating Power Supply
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
SSB	Small Signal Board
STBY	Stand-by
SVHS	Super Video Home System
SW	Sub Woofer / SoftWare
THD	Total Harmonic Distortion
TXT	TeleteXT
uP	Microprocessor

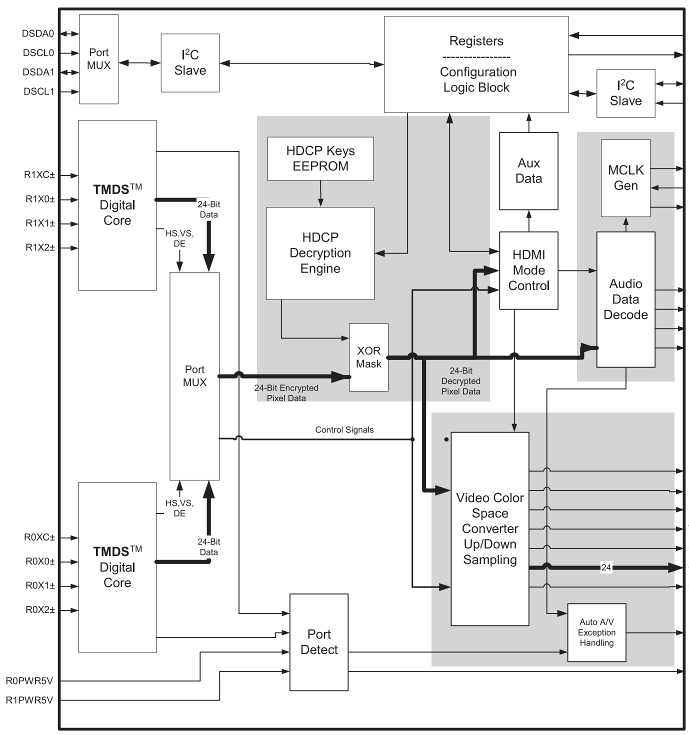
VL	Variable Level out: processed audio output toward external amplifier
VCR	Video Cassette Recorder
VGA	Video Graphics Array
WD	Watch Dog
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
YPbPr	Component video (Y= Luminance, Pb/Pr= Colour difference signals B-Y and R-Y, other amplitudes w.r.t. to YUV)
Y/C	Video related signals: Y consists of luminance signal, blanking level and sync; C consists of colour signal.
Y-OUT	Luminance-signal
YUV	Baseband component video (Y= Luminance, U/V= Colour difference signals)

9.10 IC Data Sheets

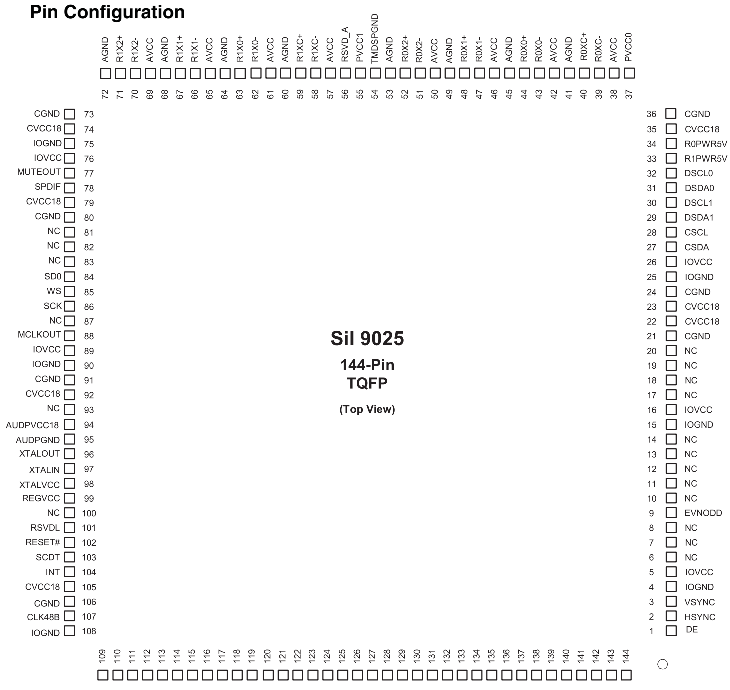
This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.10.1 Diagram B06C, Type SIL9025CTU(IC7817) (HDMI)

Block Diagram



Pin Configuration

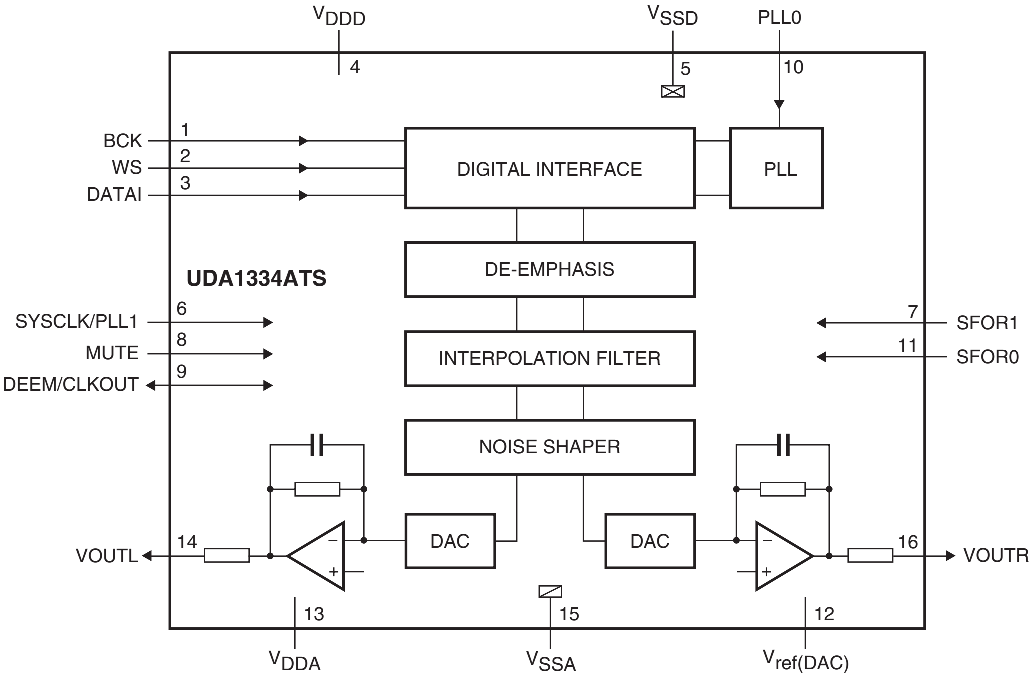


G_16860_073.eps
300107

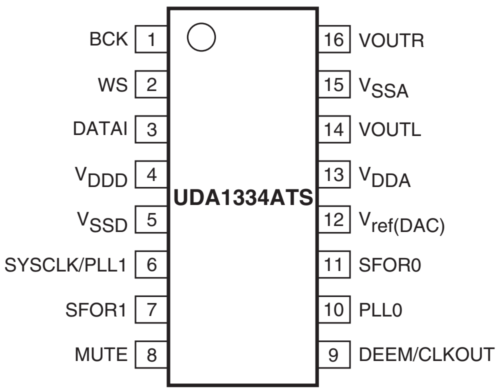
Figure 9-13 Internal block diagram and pin configuration

9.10.2 Diagram B06C, Type UDA1334ATS (IC7810) (audio DAC)

Block Diagram



Pin Configuration

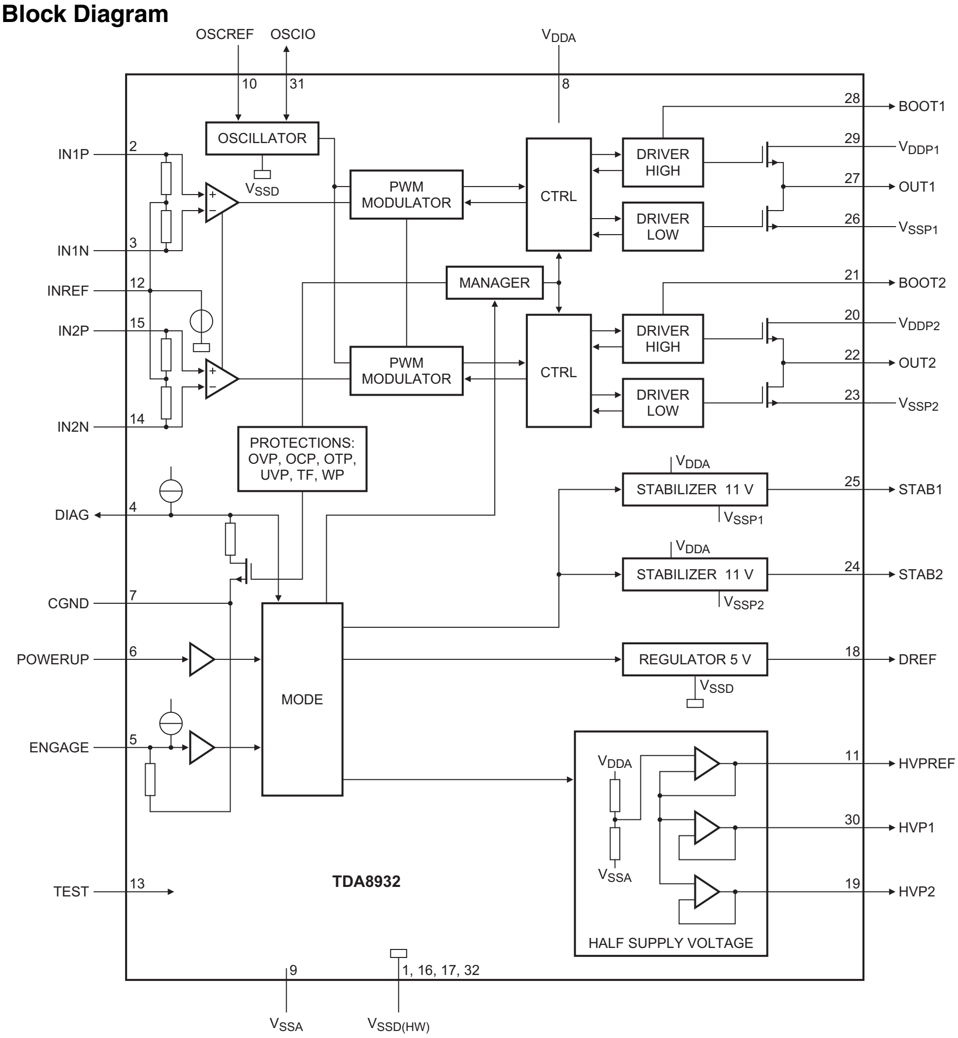


G_16860_081.eps
220207

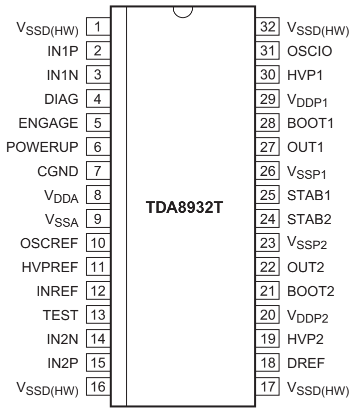
Figure 9-14 Internal block diagram and pin configuration

9.10.3 Diagram B07, Type TDA8932T (IC7A01) (audio amplifier)

Block Diagram



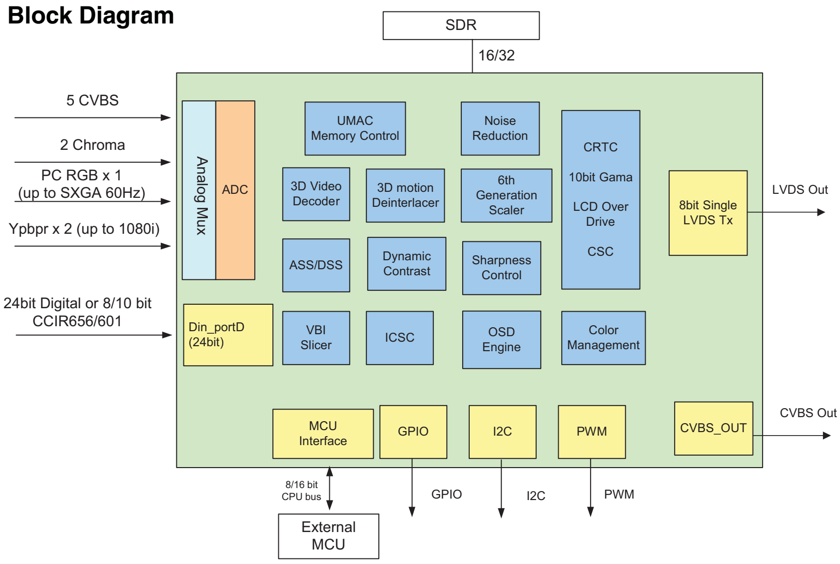
Pin Configuration



G_16860_045.eps
300107

Figure 9-15 Internal block diagram and pin configuration

9.10.4 Diagram B04B, Type SVP CX32 (IC7202) (Trident video processor)



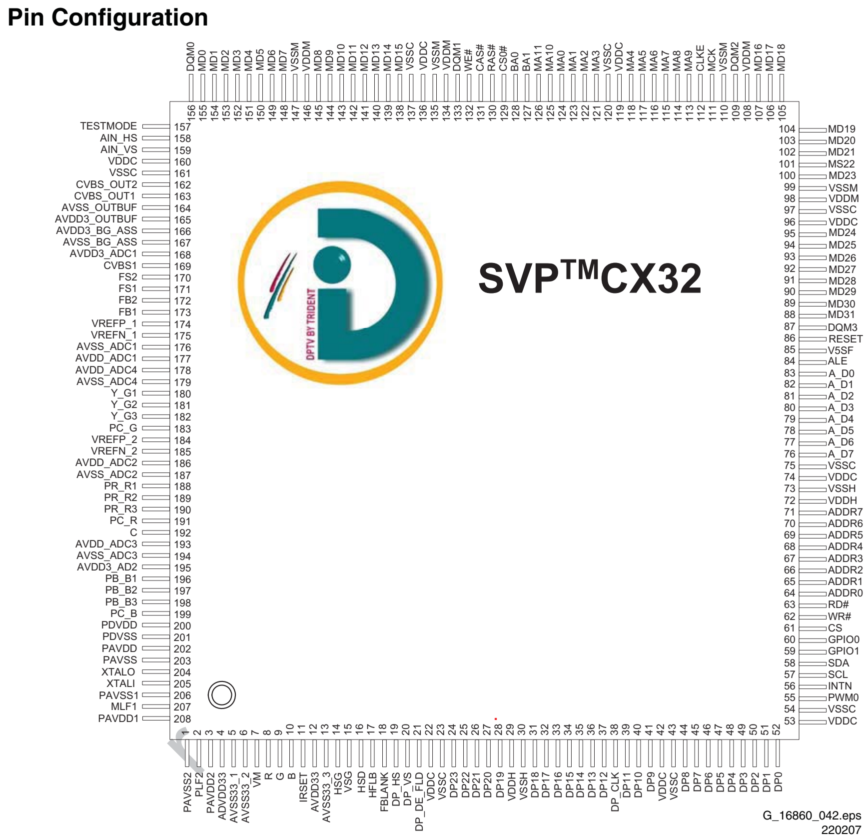


Figure 9-16 Internal block diagram and pin configuration

9.10.5 Diagram B04C, Type MSP4450P (IC7411) (Micronas sound processor)

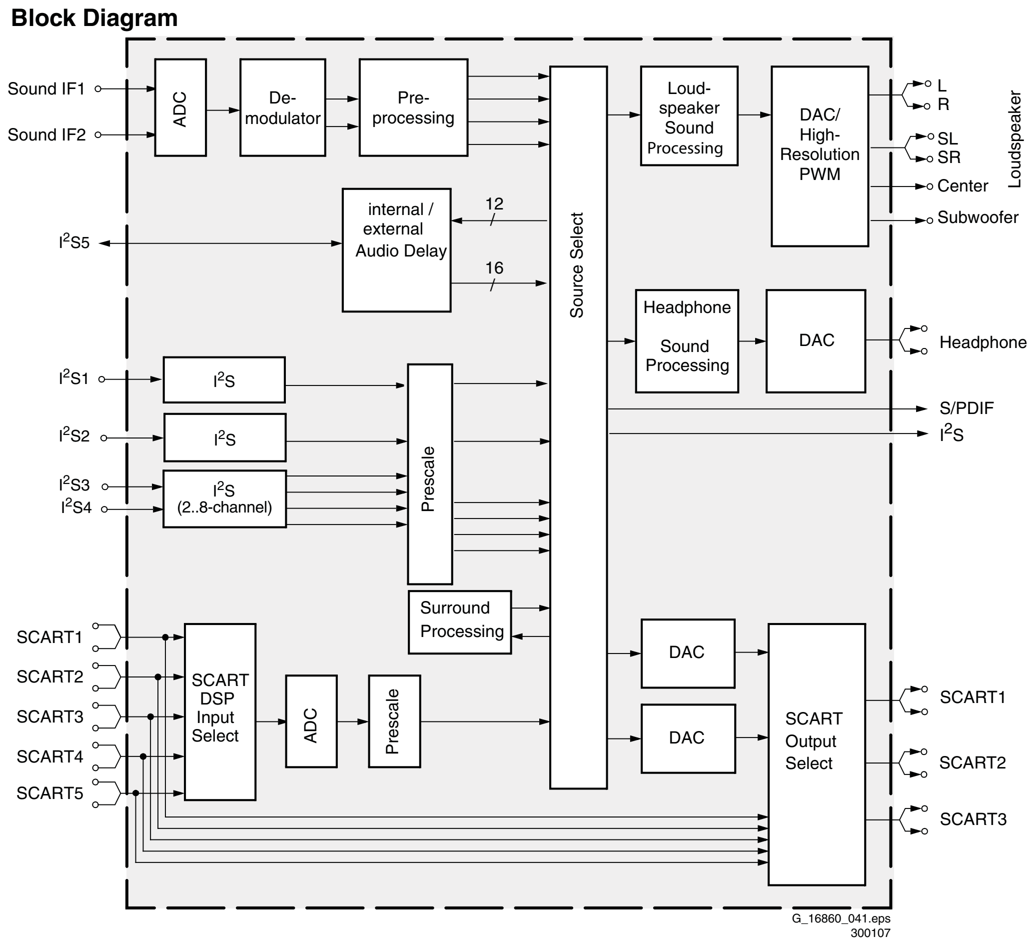


Figure 9-17 Internal block diagram

10. Spare Parts List

Set Level per Model Number (CTN)

32PFL5322/10

0815	3139 127 09075	Main Software
0816	3139 127 09093	Main NVM Software
0821	3139 127 09103	HDMI-1 Software
0822	3139 127 09113	HDMI-2 Software
1004▲	9322 230 03682	LC320W01-SL06
1005▲	3139 128 78521	Power Supply Unit
1112	3139 268 05931	IR/LED Assy [J]
1114	3139 268 05921	Keyboard Assy [E]
1116	3139 268 08851	Side IO Assy [D]
8002	3104 311 07121	Cable 2p3/220/Inlet
8304	3104 311 08031	Cable 11p/480/11p
8520	3104 311 10701	Cable 12p/680/12p
8521	3104 311 12431	Cable 14p/180/14p
8735	3139 131 08671	Cable 4p/480 1000/2ft
8C01	3139 131 08541	Cable 9p/220/9p Bk
8G51	3139 131 08281	Cable 30p/180/30p Fi-x
8M01	3139 131 08601	Cable 3p/80/3p Bk
8M20	3139 131 08691	Cable 7p/560/7p Bk
8P11	3139 131 08581	Cable 8p/220/8p Bk

5213	2422 264 00605	Loudsp. 6Ω 15W FR
5215	2422 264 00607	Loudsp. 6Ω 15W Tw

32PFL5322/12

0815	3139 127 09075	Main Software
0816	3139 127 09093	Main NVM Software
0821	3139 127 09103	HDMI-1 Software
0822	3139 127 09113	HDMI-2 Software
1004▲	9322 230 03682	LC320W01-SL06
1005▲	3139 128 78521	Power Supply Unit
1112	3139 268 05931	IR/LED Assy [J]
1114	3139 268 05921	Keyboard Assy [E]
1116	3139 268 08851	Side IO Assy [D]
8002	3104 311 07121	Cable 2p3/220/Inlet
8304	3104 311 08031	Cable 11p/480/11p
8520	3104 311 10701	Cable 12p/680/12p
8521	3104 311 12431	Cable 14p/180/14p
8735	3139 131 08671	Cable 4p/480 1000/2ft
8C01	3139 131 08541	Cable 9p/220/9p Bk
8G51	3139 131 08281	Cable 30p/180/30p Fi-x
8M01	3139 131 08601	Cable 3p/80/3p Bk
8M20	3139 131 08691	Cable 7p/560/7p Bk
8P11	3139 131 08581	Cable 8p/220/8p Bk

5213	2422 264 00605	Loudsp. 6Ω 15W FR
5215	2422 264 00607	Loudsp. 6Ω 15W Tw

42PFL5322/10

0815	3139 127 09075	Main Software
0816	3139 127 09093	Main NVM Software
0821	3139 127 09103	HDMI-1 Software
0822	3139 127 09113	HDMI-2 Software
1004▲	9322 246 97682	LC420WX3-SLA1
1005	3122 427 24571	Power Supply Unit
1112	3139 268 05931	IR/LED Assy [J]
1114	3139 268 05921	Keyboard Assy [E]
1116	3139 268 08961	Side IO Assy [D] 42
8002	3104 311 08071	Cable 2P3/140
8304	3104 311 07951	Cable 11p/680/11p
8520	3104 311 08191	Cable 12p/1200/12p
8521	3104 311 12481	Cable 14p/400/14p Wh
8735	3139 131 08041	Cable 4p/560 820/2ft
8C01	3139 131 08521	Cable 9p/400/9p Bk
8G51	3139 131 08291	Cable 30p/280/30p Fi-x
8M01	3139 131 08601	Cable 3p/80/3p Bk
8M20	3104 311 13091	Cable 7p/560/7p Wh
8P11	3139 131 08561	Cable 8p/400/8p Bk

5211	2422 264 00618	Loudsp. 6Ω 15W R
5212	2422 264 00617	Loudsp. 6Ω 15W L

42PFL5322/12

0815	3139 127 09075	Main Software
0816	3139 127 09093	Main NVM Software
0821	3139 127 09103	HDMI-1 Software
0822	3139 127 09113	HDMI-2 Software
1004▲	9322 246 97682	LC420WX3-SLA1
1005▲	3122 427 24571	Power Supply Unit
1112	3139 268 05931	IR/LED Assy [J]
1114	3139 268 05921	Keyboard Assy [E]
1116	3139 268 08961	Side IO Assy [D] 42
8002	3104 311 08071	Cable 2P3/140
8304	3104 311 07951	Cable 11p/680/11p
8735	3139 131 08041	Cable 4p/560 820/2ft
8C01	3139 131 08521	Cable 9p/400/9p Bk
8G51	3139 131 08291	Cable 30p/280/30p Fi-x
8M01	3139 131 08601	Cable 3p/80/3p Bk
8M20	3104 311 13091	Cable 7p/560/7p Wh
8P11	3139 131 08561	Cable 8p/400/8p Bk

5211	2422 264 00618	Loudsp. 6Ω 15W R
5212	2422 264 00617	Loudsp. 6Ω 15W L

Small Signal Board [B]

Various

1101	3139 147 19801	Tuner UV1318S/A IH -3
1102	9322 042 72682	SAW 38.9MHz K3953M
1103	2422 549 44341	SAW 38.9MHz K9656M
1104	2422 543 01386	Xtal 4MHz 20p
1201	2422 543 01133	Xtal 14.32MHz 20pF
1210	2422 549 45325	Bead 67Ω at 100MHz
1211	2422 549 45325	Bead 67Ω at 100MHz
1212	2422 549 45325	Bead 67Ω at 100MHz
1213	2422 549 45325	Bead 67Ω at 100MHz
1214	2422 549 45325	Bead 67Ω at 100MHz
1215	2422 549 45325	Bead 67Ω at 100MHz
1216	2422 549 45325	Bead 67Ω at 100MHz
1301	2422 543 01526	Xtal 10MHz 12p NX8045
1304	2422 025 10655	Connector 11p m
1314	2422 025 18749	Connector 3p m
1411	2422 543 01461	Xtal 18.432MHz 12p
1504	2422 025 20251	SCART V 21p F Bk
1506	2422 025 20251	SCART V 21p F Bk
1615	2422 026 05894	Socket CINCH
1735	2422 025 09406	Connector 4p m
1810	2422 033 00617	Socket HDMI
1811	2422 033 00617	Socket HDMI
1823	2422 543 01517	Xtal 28M322 18p NX5032
1C01	2422 025 10769	Connector 9p m
1G51	2422 025 18772	Connector 30p m
1M20	4822 267 10618	Connector 7p
1P11	4822 265 11352	Connector 8p

2112	2020 552 00343	22µF 10% 16V
2117	5322 126 11583	10nF 10% 50V 0603
2118	5322 126 11583	10nF 10% 50V 0603
2119	2020 552 96863	100nF 50V 0603
2120	2020 552 00343	22µF 10% 16V
2121	3198 016 31590	15pF 10% 50V 0603
2122	3198 016 31590	15pF 10% 50V 0603
2123	4822 126 14247	1.5nF 50V 0603
2125	3198 017 44740	470nF 10V 0603
2126	3198 017 42240	220nF 16V Y5V 0603
2127	4822 122 33761	22pF 5% 50V
2128	5322 126 11583	10nF 10% 50V 0603
2129	2020 552 00343	22µF 10% 16V
2130	5322 126 11583	10nF 10% 50V 0603
2131	2020 552 00343	22µF 10% 16V
2132	2020 552 00343	22µF 10% 16V
2133	5322 126 11583	10nF 10% 50V 0603
2136	3198 017 44740	470nF 10V 0603
2137	5322 126 11583	10nF 10% 50V 0603
2138	5322 126 11583	10nF 10% 50V 0603
2139	4822 126 14315	390pF 5% 50V 0603
2143	5322 126 11578	1nF 10% 50V 0603
2144	5322 126 11583	10nF 10% 50V 0603
2145	5322 126 11578	1nF 10% 50V 0603
2147	2238 786 19856	330nF 20% 160V 0603
2148	2238 586 59812	100nF 20% 50V 0603
2149	2020 552 00132	2.2µF 10% 10V
2151	3198 030 81090	10µF 20% 50V
2207	2238 586 59812	100nF 20% 50V 0603
2208	4822 124 12095	100µF 20% 16V
2209	4822 124 12095	100µF 20% 16V
2210	2238 586 59812	100nF 20% 50V 0603
2211	2020 552 00291	10µF 20% 6V3 0603
2212	2238 586 59812	100nF 20% 50V 0603
2213	2238 586 59812	100nF 20% 50V 0603
2214	2238 586 59812	100nF 20% 50V 0603
2215	2238 586 59812	100nF 20% 50V 0603
2216	2020 552 00291	10µF 20% 6V3 0603
2217	2238 586 59812	100nF 20% 50V 0603
2218	2238 586 59812	100nF 20% 50V 0603
2219	2238 586 59812	100nF 20% 50V 0603
2220	2238 586 59812	100nF 20% 50V 0603
2221	2238 586 59812	100nF 20% 50V 0603
2222	2238 586 59812	100nF 20% 50V 0603
2223	2238 586 59812	100nF 20% 50V 0603
2224	2238 586 59812	100nF 20% 50V 0603
2225	2238 586 59812	100nF 20% 50V 0603
2226	2238 586 59812	100nF 20% 50V 0603
2227	2238 586 59812	100nF 20% 50V 0603
2228	2238 586 59812	100nF 20% 50V 0603
2229	2020 552 00134	22µF 20% 6.3V 0805
2230	2020 552 00291	10µF 20% 6V3 0603
2231	2238 586 59812	100nF 20% 50V 0603
2232	2238 586 59812	100nF 20% 50V 0603
2233	2238 586 59812	100nF 20% 50V 0603
2234	2238 586 59812	100nF 20% 50V 0603
2235	2238 586 59812	100nF 20% 50V 0603
2236	2020 552 00291	10µF 20% 6V3 0603
2237	2238 586 59812	100nF 20% 50V 0603
2238	2238 586 59812	100nF 20% 50V 0603
2239	2238 586 59812	100nF 20% 50V 0603
2240	2238 586 59812	100nF 20% 50V 0603
2241	2238 586 59812	100nF 20% 50V 0603
2242	2238 586 59812	100nF 20% 50V 0603
2243	2238 586 59812	100nF 20% 50V 0603
2244	2238 586 59812	100nF 20% 50V 0603
2245	2238 586 59812	100nF 20% 50V 0603
2246	2020 552 96749	20pF 5% 50V 0603
2247	2020 552 96749	20pF 5% 50V 0603
2248	2022 552 05679	1µF 10% 16V 0805
2250	2238 586 59812	100nF 20% 50V 0603
2251	2238 586 59812	100nF 20% 50V 0603
2252	2238 586 59812	100nF 20% 50V 0603
2253	2238 586 59812	100nF 20% 50V 0603
2254	2238 586 59812	100nF 20% 50V 0603
2255	2238 586 59812	100nF 20% 50V 0603
2256	2238 586 59812	100nF 20% 50V 0603
2257	2238 586 59812	100nF 20% 50V 0603
2258	2238 586 59812	100nF 20% 50V 0603
2259	2238 586 59812	100nF 20% 50V 0603
2260	2238 586 59812	100nF 20% 50V 0603
2261	2238 586 59812	100nF 20% 50V 0603
2266	2238 586 59812	100nF 20% 50V 0603
2267	2238 586 59812	100nF 20% 50V 0603
2268	2238 586 59812	100nF 20% 50V 0603
2269	2238 586 59812	100nF 20% 50V 0603
2270	2238 586 59812	100nF 20% 50V 0603
2271	2238 586 59812	100nF 20% 50V 0603
2272	2238 586 59812	100nF 20% 50V 0603
2273	2238 586 59812	100nF 20% 50V 0603
2274	2238 586 59812	100nF 20% 50V 0603
2275	2238 586 15628	2.7nF 10% 50V 0603
2276	2238 586 15628	2.7nF 10% 50V 0603
2277	2238 586 59812	100nF 20% 50V 0603
2279	2020 552 00291	10µF 20% 6V3 0603
2280	2020 552 00291	10µF 20% 6V3 0603
2282	2020 552 00291	10µF 20% 6V3 0603
2284	2020 552 00291	10µF 20% 6V3 0603
2286	2020 552 00291	10µF 20% 6V3 0603
2287	2020 552 00291	10µF 20% 6V3 0603
2288	2020 552 00291	10µF 20% 6V3 0603
2289	2020 552 00291	10µF 20% 6V3 0603
2290	2020 552 00291	10µF 20% 6V3 0603
2291	2020 552 00291	10µF 20% 6V3 0603
2292	2020 552 00291	10µF 20% 6V3 0603
2293	2020 552 00291	10µF 20% 6V3 0603
2295	2238 586 59812	100nF 20% 50V 0603
2296	2238 586 59812	100nF 20% 50V 0603
2297	2020 552 00134	22µF 20% 6.3V 0805
2298	2238 586 59812	100nF 20% 50V 0603
2310	2238 586 59812	100nF 20% 50V 0603
2311	2020 552 00291	10µF 20% 6V3 0603
2312	2238 586 59812	100nF 20% 50V 0603
2313	2238 586 59812	100nF 20% 50V 0603
2314	3198 016 31590	15pF 10% 50V 0603
2315	2238 586 59812	100nF 20% 50V 0603

2316	3198 016 31590	15pF 10% 50V 0603
2317	2238 586 59812	100nF 20% 50V 0603
2318	2238 586 59812	100nF 20% 50V 0603
2320	2238 586 59812	100nF 20% 50V 0603
2323	2238 586 59812	100nF 20% 50V 0603
2327	5322 126 11583	10nF 10% 50V 0603
2329	5322 126 11578	1nF 10% 50V 0603
2330	5322 126 11578	1nF 10% 50V 0603
2331	5322 126 11578	1nF 10% 50V 0603
2332	5322 126 11578	1nF 10% 50V 0603
2333	5322 126 11578	1nF 10% 50V 0603
2335	5322 126 11578	1nF 10% 50V 0603
2336	5322 126 11578	1nF 10% 50V 0603
2337	5322 126 11578	1nF 10% 50V 0603
2338	4822 126 13879	220nF +80-20% 16V
2408	4822 126 13881	470pF 5% 50V
2409	4822 126 14247	1.5nF 50V 0603
2410	4822 124 23002	10µF 16V
2411	2020 552 00291	10µF 20% 6V3 0603
2412	4822 126 13883	220pF 5% 50V
2413	4822 126 13883	220pF 5% 50V
2414	2020 552 00291	10µF 20% 6V3 0603
2415	3198 016 33380	3.3pF 50V 0603
2416	3198 016 33380	3.3pF 50V 0603
2417	4822 126 14241	330pF 0603 50V
2418	4822 126 14241	330pF 0603 50V
2419	2238 586 59812	100nF 20% 50V 0603
2420	4822 124 23002	10µF 16V
2421	4822 126 14241	330pF 0603 50V
2422	4822 126 14241	330pF 0603 50V
2423	4822 124 23002	10µF 16V
2424	2020 552 00291	10µF 20% 6V3 0603
2425	2020 552 00291	10µF 20% 6V3 0603
2426	2020 552 00291	10µF 20% 6V3 0603
2427	2020 552 00291	10µF 20% 6V3 0603
2428	2020 552 94427	100pF 5% 50V
2429	2020 552 94427	100pF 5% 50V
2430	2020 552 94427	100pF 5% 50V
2431	2020 552 94427	100pF 5% 50V
2432	4822 126 14225	56pF 5% 50V 0603
2433	4822 126 14241	330pF 0603 50V
2434	4822 126 14241	330pF 0603 50V
2435	4822 126 14241	330pF 0603 50V
2436	2020 552 00291	10µF 20% 6V3 0603
2437	2020 552 00291	10µF 20% 6V3 0603
2438	2238 586 59812	100nF 20% 50V 0603
2439	2020 552 00247	470nF 10% 25V
2440	2020 552 00247	470nF 10% 25V
2441	4822 126 14247	1.5nF 50V 0603
2442	4822 126 13881	470pF 5% 50V
2443	4822 126 14247	1.5nF 50V 0603
2444	4822 126 13881	470pF 5% 50V
2445	2238 586 59812	100nF 20% 50V 0603
2502	4822 126 14241	330pF 0603 50V
2506	4822 126 14241	330pF 0603 50V
2508	4822 126 14241	330pF 0603 50V
2509	4822 126 13879	220nF +80-20% 16V
2512	5322 126 11579	3.3nF 10% 63V
2514	4822 126 14241	330pF 0603 50V
2515	4822 126 13879	220nF +80-20% 16V
2517	5322 126 11579	3.3nF 10% 63V
2518	4822 126 13879	220nF +80-20% 16V
2520	5322 126 11579	3.3nF 10% 63V
2521	4822 126 13879	220nF +80-20% 16V
2523	5322 126 11579	3.3nF 10% 63V
2525	4822 126 13879	220nF +80-20% 16V
2533	4822 126 13879	220nF +80-20% 16V
2534	4822 126 13879	220nF +80-20% 16V
2536	4822 126 13879	220nF +80-20% 16V
2607	4822 126 13879	220nF +80-20% 16V
2608	5322 126 11579	3.3nF 10% 63V
2610	4822 126 13879	220nF +80-20% 16V
2612	5322 126 11579	3.3nF 10% 63V
2801	4822 124 11131	47µF 6.3V
2802	2238 586 59812	100nF 20% 50V 0603
2803	2238 586 59812	100nF 20% 50V 0603
2804	2238 586 59812	100nF 20% 50V 0603
2805	4822 124 11131	47µF 6.3V
2806	2238 586 59812	100nF 20% 50V 0603
2807	2238 586 59812	100nF 20% 50V 0603
2808	4822 124 11131	47µF 6.3V
2809	5322 126 11583	10nF 10% 50V 0603
2810	5322 126 11583	10nF 10% 50V 0603
2811	2020 552 00291	10µF 20% 6V3 0603
2812	2020 552 00291	10µF 20% 6V3 0603
2813	4822 126 14507	18pF 5% 50V 0603
2814	5322 126 11583	10nF 10% 50V 0603
2815	5322 126 11583	10nF 10% 50V 0603
2816	5322 126 11578	1nF 10% 50V 0603
2817	2238 586 59812	100nF 20% 50V 0603
2818	2238 586 59812	100nF 20% 50V 0603
2819	2238 586 59812	100nF 20% 50V 0603
2828	4822 126 14507	18pF 5% 50V 0603
2829	2238 586 59812	100nF 20% 50V 0603

2830	2238 586 59812	100nF 20% 50V 0603
2833	2238 586 59812	100nF 20% 50V 0603
2835	2238 586 59812	100nF 20% 50V 0603
2836	2238 586 59812	100nF 20% 50V 0603
2838	2238 586 59812	100nF 20% 50V 0603
2839	2238 586 59812	100nF 20% 50V 0603
2840	2238 586 59812	100nF 20% 50V 0603
2843	2238 586 59812	100nF 20% 50V 0603
2844	2238 586 59812	100nF 20% 50V 0603
2845	2238 586 59812	100nF 20% 50V 0603
2847	5322 126 11578	1nF 10% 50V 0603
2848	5322 126 11578	1nF 10% 50V 0603
2849	5322 126 11578	1nF 10% 50V 0603
2850	5322 126 11578	1nF 10% 50V 0603
2851	5322 126 11578	1nF 10% 50V 0603
2852	5322 126 11578	1nF 10% 50V 0603
2853	5322 126 11578	1nF 10% 50V 0603
2854	5322 126 11578	1nF 10% 50V 0603
2855	3198 016 31020	1nF 25V 0603
2856	5322 126 11578	1nF 10% 50V 0603
2857	5322 126 11578	1nF 10% 50V 0603
2858	5322 126 11578	1nF 10% 50V 0603
2859	5322 126 11578	1nF 10% 50V 0603
2860	5322 126 11578	1nF 10% 50V 0603
2861	5322 126 11578	1nF 10% 50V 0603
2865	3198 016 31020	1nF 25V 0603
2866	5322 126 11578	1nF 10% 50V 0603
2867	5322 126 11578	1nF 10% 50V 0603
2868	5322 126 11578	1nF 10% 50V 0603
2869	5322 126 11578	1nF 10% 50V 0603
2870	5322 126 11578	1nF 10% 50V 0603
2871	5322 126 11578	1nF 10% 50V 0603
2872	5322 126 11578	1nF 10% 50V 0603
2873	5322 126 11578	1nF 10% 50V 0603
2874	3198 016 31020	1nF 25V 0603
2875	5322 126 11578	1nF 10% 50V 0603
2876	5322 126 11578	1nF 10% 50V 0603
2901	2020 552 96664	33pF 50V 0603
2902	3198 017 44740	470nF 10V 0603
2903	4822 124 12095	100µF 20% 16V
2904	3198 017 44740	470nF 10V 0603
2905	2020 552 96664	33pF 50V 0603
2906	4822 124 12095	100µF 20% 16V
2907	3198 017 44740	470nF 10V 0603
2908	4822 126 13879	220nF +80-20% 16V
2913	4822 126 13879	220nF +80-20% 16V
2940	4822 124 11131	47µF 6.3V
2A01	2238 586 59812	100nF 20% 50V 0603
2A02	2238 586 59812	100nF 20% 50V 0603
2A04	2020 021 00215	220µF 20% 25V
2A08	2020 021 00215	220µF 20% 25V
2A09	2238 586 59812	100nF 20% 50V 0603
2A10	2238 586 59812	100nF 20% 50V 0603
2A11	2020 552 96807	1µF 10% 10V 0603
2A12	4822 126 13883	220pF 5% 50V
2A13	3198 017 42240	220nF 16V Y5V 0603
2A14	2020 552 00247	470nF 10% 25V
2A15	2020 552 96807	1µF 10% 10V 0603
2A16	2020 552 96807	1µF 10% 10V 0603
2A17	3198 016 31020	1nF 25V 0603
2A18	3198 016 31020	1nF 25V 0603
2A19	4822 126 13883	220pF 5% 50V
2A20	2020 552 96807	1µF 10% 10V 0603
2A21	3198 016 31020	1nF 25V 0603
2A22	2238 586 59812	100nF 20% 50V 0603
2A23	3198 016 31020	1nF 25V 0603
2A24	2238 586 59812	100nF 20% 50V 0603
2A25	3198 017 31530	15nF 20% 50V 0603
2A26	3198 017 42240	220nF 16V Y5V 0603
2A27	3198 017 31530	15nF 20% 50V 0603
2A28	2020 552 00247	470nF 10% 25V
2A29	2238 586 59812	100nF 20% 50V 0603
2A30	2238 586 59812	100nF 20% 50V 0603
2A31	3198 016 31020	1nF 25V 0603
2A32	3198 016 31020	1nF 25V 0603
2A33	2238 586 59812	100nF 20% 50V 0603
2A34	2238 586 59812	100nF 20% 50V 0603
2A35	3198 016 31020	1nF 25V 0603
2A36	3198 016 31020	1nF 25V 0603
2A37	3198 017 42240	220nF 16V Y5V 0603
2A38	3198 017 42240	220nF 16V Y5V 0603
2A40	2020 552 00247	470nF 10% 25V
2A41	2020 552 96807	1µF 10% 10V 0603
2A45	3198 016 31020	1nF 25V 0603
2A46	3198 024 44730	47nF 50V 0603
2A47	3198 024 44730	47nF 50V 0603
2B10	4822 124 12095	100µF 20% 16V
2B11	5322 126 11583	10nF 10% 50V 0603
2B12	2020 552 00343	22µF 10% 16V
2B13	2022 031 00373	470µF 20% 16V
2B14	4822 126 13883	220pF 5% 50V
2B15	2238 916 15641	22nF 10% 25V 0603
2B17	2238 586 59812	100nF 20% 50V 0603
2B18	4822 124 23002	10µF 16V

2B19	2022 031 00308	22µF 20% 35V
2B20	2020 552 94427	100pF 5% 50V
2B21	4822 124 23002	10µF 16V
2B22	3198 030 74780	4u7 20% 35V
2B24	2020 012 93822	47µF 20% 16V
2B25	2238 586 59812	100nF 20% 50V 0603
2C55	5322 126 11578	1nF 10% 50V 0603
2C56	5322 126 11578	1nF 10% 50V 0603
2C57	5322 126 11578	1nF 10% 50V 0603
2L24	4822 126 13879	220nF +80-20% 16V
2L25	4822 126 13879	220nF +80-20% 16V

3110	3198 021 38220	8.2kΩ 5% 0.062W 0603
3111	4822 051 30562	5.6kΩ 5% 0.063W 0603
3115	4822 051 30393	39kΩ 5% 0.062W
3116	4822 051 30682	6.8Ω 5% 0.062W
3117	4822 051 30222	2.2kΩ 5% 0.062W
3118	4822 051 30222	2.2kΩ 5% 0.062W
3119	4822 051 30223	22kΩ 5% 0.062W
3120	2422 549 42896	Bead 120Ω 100MHz
3121	2422 549 42896	Bead 120Ω 100MHz
3122	4822 051 30183	18kΩ 5% 0.062W
3123	4822 051 30151	150Ω 5% 0.062W
3124	4822 051 30101	100Ω 5% 0.062W
3125	4822 051 30151	150Ω 5% 0.062W
3126	4822 051 30181	180Ω 5% 0.062W
3127	4822 051 30562	5.6kΩ 5% 0.063W 0603
3128	4822 051 30101	100Ω 5% 0.062W
3129	4822 051 30101	100Ω 5% 0.062W
3130	4822 051 30102	1kΩ 5% 0.062W
3133	4822 117 11151	1Ω 5%
3134	4822 117 11151	1Ω 5%
3135	4822 117 12971	15Ω 5% 0603 0.62W
3136	2322 762 60479	47Ω 5% 2512
3137	2322 762 60479	47Ω 5% 2512
3201	3198 031 11010	4 x 100Ω 5% 1206
3202	3198 031 11010	4 x 100Ω 5% 1206
3203	4822 117 13523	220Ω 5% 0.63W
3204	4822 117 13523	220Ω 5% 0.63W
3211	4822 051 30102	1kΩ 5% 0.062W
3212	4822 051 30101	100Ω 5% 0.062W
3213	4822 117 12925	47kΩ 1% 0.063W 0603
3215	4822 051 30101	100Ω 5% 0.062W
3216	4822 051 30479	47Ω 5% 0.062W
3217	4822 117 12925	47kΩ 1% 0.063W 0603
3221	4822 051 30472	4.7Ω 5% 0.062W
3222	4822 051 30472	4.7Ω 5% 0.062W
3239	4822 051 30101	100Ω 5% 0.062W
3241	4822 051 30221	220Ω 5% 0.062W
3242	4822 051 30472	4.7Ω 5% 0.062W
3243	4822 051 30101	100Ω 5% 0.062W
3244	3198 021 32290	22Ω 5% 0603
3245	4822 051 30103	10kΩ 5% 0.062W
3246	4822 051 30101	100Ω 5% 0.062W
3247	4822 051 30101	100Ω 5% 0.062W
3248	3198 021 32290	22Ω 5% 0603
3260	2350 035 10229	4 x 22Ω 5% 1206
3261	2350 035 10229	4 x 22Ω 5% 1206
3262	2350 035 10229	4 x 22Ω 5% 1206
3263	2350 035 10229	4 x 22Ω 5% 1206
3264	2350 035 10229	4 x 22Ω 5% 1206
3265	2350 035 10229	4 x 22Ω 5% 1206
3266	3198 021 32290	22Ω 5% 0603
3267	3198 021 32290	22Ω 5% 0603
3268	2350 035 10229	4 x 22Ω 5% 1206
3271	2350 035 10229	4 x 22Ω 5% 1206
3300	4822 117 11817	1.2kΩ 1% 0.0625W
3303	4822 051 30101	100Ω 5% 0.062W
3305	4822 051 30332	3.3Ω 5% 0.062W
3308	4822 051 30332	3.3Ω 5% 0.062W
3310	4822 051 30102	1kΩ 5% 0.062W
3313	4822 051 30331	330Ω 5% 0.062W
3314	4822 051 30103	10kΩ 5% 0.062W
3315	4822 051 30101	100Ω 5% 0.062W
3316	4822 051 30103	10kΩ 5% 0.062W
3318	4822 051 30101	100Ω 5% 0.062W
3319	4822 051 30103	10kΩ 5% 0.062W
3320	4822 051 30101	100Ω 5% 0.062W
3322	4822 051 30101	100Ω 5% 0.062W
3323	4822 051 30101	100Ω 5% 0.062W
3324	4822 051 30331	330Ω 5% 0.062W
3325	4822 051 30103	10kΩ 5% 0.062W
3329	4822 051 30101	100Ω 5% 0.062W
3336	4822 051 30101	100Ω 5% 0.062W
3338	4822 051 30101	100Ω 5% 0.062W
3339	4822 051 30101	100Ω 5% 0.062W
3340	4822 051 30101	100Ω 5% 0.062W
3341	4822 051 30101	100Ω 5% 0.062W
3342	4822 051 30101	100Ω 5% 0.062W
3343	4822 051 30101	100Ω 5% 0.062W
3345	4822 051 30101	100Ω 5% 0.062W

3346	4822 051 30101	100Ω 5% 0.062W
3347	4822 051 30103	10kΩ 5% 0.062W
3348	4822 051 30479	47Ω 5% 0.062W
3349	4822 051 30103	10kΩ 5% 0.062W
3350	4822 051 30103	10kΩ 5% 0.062W
3351	4822 051 30332	3.3Ω 5% 0.062W
3352	4822 051 30332	3.3Ω 5% 0.062W
3353	4822 051 30103	10kΩ 5% 0.062W
3354	4822 051 30101	100Ω 5% 0.062W
3355	4822 051 30101	100Ω 5% 0.062W
3356	4822 051 30101	100Ω 5% 0.062W
3357	4822 051 30101	100Ω 5% 0.062W
3361	4822 051 30101	100Ω 5% 0.062W
3364	4822 051 30101	100Ω 5% 0.062W
3365	4822 051 30101	100Ω 5% 0.062W
3366	4822 051 30103	10kΩ 5% 0.062W
3368	4822 051 30101	100Ω 5% 0.062W
3370	4822 051 30101	100Ω 5% 0.062W
3372	4822 051 30472	4.7Ω 5% 0.062W
3373	4822 051 30101	100Ω 5% 0.062W
3375	4822 051 30472	4.7Ω 5% 0.062W
3377	4822 051 30332	3.3Ω 5% 0.062W
3378	4822 051 30101	100Ω 5% 0.062W
3379	4822 051 30332	3.3Ω 5% 0.062W
3380	4822 051 30101	100Ω 5% 0.062W
3381	3198 021 32290	22Ω 5% 0603
3382	4822 051 30101	100Ω 5% 0.062W
3383	4822 117 12925	47kΩ 1% 0.063W 0603
3384	3198 021 32290	22Ω 5% 0603
3385	4822 117 12925	47kΩ 1% 0.063W 0603
3386	4822 051 30101	100Ω 5% 0.062W
3387	4822 051 30101	100Ω 5% 0.062W
3388	4822 051 30101	100Ω 5% 0.062W
3389	4822 051 30479	47Ω 5% 0.062W
3390	4822 051 30479	47Ω 5% 0.062W
3391	4822 051 30479	47Ω 5% 0.062W
3393	4822 051 30153	15kΩ 5% 0.062W
3394	4822 051 30223	22kΩ 5% 0.062W
3395	4822 051 30152	1.5Ω 5% 0.062W
3396	4822 051 30102	1kΩ 5% 0.062W
3397	4822 117 12925	47kΩ 1% 0.063W 0603
3398	4822 117 13632	100kΩ 1% 0603 0.62W
3399	4822 051 30103	10kΩ 5% 0.062W
3402 ⚠	4822 117 11151	1Ω 5%
3410	4822 051 30101	100Ω 5% 0.062W
3411	4822 051 30101	100Ω 5% 0.062W
3417	4822 051 30101	100Ω 5% 0.062W
3418	4822 051 30101	100Ω 5% 0.062W
3419	4822 051 30101	100Ω 5% 0.062W
3420	4822 051 30101	100Ω 5% 0.062W
3500	4822 051 30151	150Ω 5% 0.062W
3502	4822 051 30151	150Ω 5% 0.062W
3503	4822 051 30151	150Ω 5% 0.062W
3506	4822 051 30151	150Ω 5% 0.062W
3507	4822 051 30151	150Ω 5% 0.062W
3508	4822 051 30333	33kΩ 5% 0.062W
3510	4822 051 30151	150Ω 5% 0.062W
3511	4822 051 30333	33kΩ 5% 0.062W
3512	4822 051 30151	150Ω 5% 0.062W
3513	4822 051 30333	33kΩ 5% 0.062W
3514	4822 051 30151	150Ω 5% 0.062W
3515	4822 051 30333	33kΩ 5% 0.062W
3516	4822 051 30101	100Ω 5% 0.062W
3517	4822 051 30759	75Ω 5% 0.062W
3518	4822 051 30273	27kΩ 5% 0.062W
3519	4822 117 12971	15Ω 5% 0603 0.62W
3520	4822 051 30682	6.8Ω 5% 0.062W
3521	4822 051 30102	1kΩ 5% 0.062W
3522	4822 051 30689	68Ω 5% 0.063W 0603
3523	4822 051 30101	100Ω 5% 0.062W
3524	4822 117 12971	15Ω 5% 0603 0.62W
3525	4822 051 30102	1kΩ 5% 0.062W
3526	4822 051 30759	75Ω 5% 0.062W
3528	4822 051 30101	100Ω 5% 0.062W
3529	4822 051 30101	100Ω 5% 0.062W
3530	4822 051 30759	75Ω 5% 0.062W
3531	4822 051 30759	75Ω 5% 0.062W
3532	4822 051 30102	1kΩ 5% 0.062W
3533	4822 051 30759	75Ω 5% 0.062W
3535	4822 051 30689	68Ω 5% 0.063W 0603
3536	4822 051 30102	1kΩ 5% 0.062W
3537	4822 051 30102	1kΩ 5% 0.062W
3538	4822 051 30472	4.7Ω 5% 0.062W
3540	4822 051 30472	4.7Ω 5% 0.062W
3545	4822 051 30101	100Ω 5% 0.062W
3546	4822 051 30759	75Ω 5% 0.062W
3550	4822 051 30273	27kΩ 5% 0.062W
3551	4822 051 30682	6.8Ω 5% 0.062W
3552	4822 051 30101	100Ω 5% 0.062W
3553	4822 051 30759	75Ω 5% 0.062W
3554	4822 051 30689	68Ω 5% 0.063W 0603
3555	4822 051 30689	68Ω 5% 0.063W 0603
3601	4822 051 30759	75Ω 5% 0.062W
3603	4822 051 30759	75Ω 5% 0.062W
3605	4822 051 30759	75Ω 5% 0.062W
3607	4822 051 30151	150Ω 5% 0.062W
3608	4822 051 30333	33kΩ 5% 0.062W
3611	4822 051 30151	150Ω 5% 0.062W
3612	4822 051 30333	33kΩ 5% 0.062W
3617	4822 051 30101	100Ω 5% 0.062W
3618	4822 051 30101	100Ω 5% 0.062W
3619	4822 051 30101	100Ω 5% 0.062W
3801	4822 117 12925	47kΩ 1% 0.063W 0603
3802	4822 117 12925	47kΩ 1% 0.063W 0603
3803	3198 021 31080	1Ω 5% 0603
3804	3198 021 31080	1Ω 5% 0603
3805	4822 051 30221	220Ω 5% 0.062W
3806	4822 051 30221	220Ω 5% 0.062W
3807	3198 031 13390	4 x 33Ω 5% 1206
3809	4822 051 30103	10kΩ 5% 0.062W
3810	4822 051 30472	4.7Ω 5% 0.062W
3811	4822 051 30472	4.7Ω 5% 0.062W
3815	4822 051 30105	1MΩ 5% 0.062W
3819	4822 051 30339	33Ω 5% 0.062W
3828	4822 051 30472	4.7Ω 5% 0.062W
3830	4822 051 30472	4.7Ω 5% 0.062W
3831	4822 117 12925	47kΩ 1% 0.063W 0603
3832	4822 117 12925	47kΩ 1% 0.063W 0603
3833	4822 051 30472	4.7Ω 5% 0.062W
3834	4822 051 30472	4.7Ω 5% 0.062W
3835	4822 051 30339	33Ω 5% 0.062W
3846	4822 051 30472	4.7Ω 5% 0.062W
3850	4822 051 30103	10kΩ 5% 0.062W
3851	3198 031 13390	4 x 33Ω 5% 1206
3852	3198 031 13390	4 x 33Ω 5% 1206
3853	3198 031 13390	4 x 33Ω 5% 1206
3854	3198 031 13390	4 x 33Ω 5% 1206
3855	3198 031 13390	4 x 33Ω 5% 1206
3856	3198 031 13390	4 x 33Ω 5% 1206
3857	4822 051 30339	33Ω 5% 0.062W
3858	4822 051 30339	33Ω 5% 0.062W
3859	4822 051 30339	33Ω 5% 0.062W
3860	4822 051 30339	33Ω 5% 0.062W
3862	4822 051 30102	1kΩ 5% 0.062W
3863	4822 051 30222	2.2kΩ 5% 0.062W
3864	4822 051 30101	100Ω 5% 0.062W
3877	4822 051 30222	2.2kΩ 5% 0.062W
3880	4822 051 30102	1kΩ 5% 0.062W
3881	4822 051 30222	2.2kΩ 5% 0.062W
3882	4822 051 30101	100Ω 5% 0.062W
3883	4822 051 30222	2.2kΩ 5% 0.062W
3896	4822 051 30101	100Ω 5% 0.062W
3897	4822 051 30101	100Ω 5% 0.062W
3901	4822 117 12925	47kΩ 1% 0.063W 0603
3902	4822 051 30124	120kΩ 5% 0.062W
3904	4822 051 30339	33Ω 5% 0.062W
3905	4822 117 12925	47kΩ 1% 0.063W 0603
3906	4822 117 13632	100kΩ 1% 0603 0.62W
3907	4822 117 13632	100kΩ 1% 0603 0.62W
3908	4822 051 30124	120kΩ 5% 0.062W
3910	4822 051 30339	33Ω 5% 0.062W
3911	4822 051 30103	10kΩ 5% 0.062W
3912	4822 051 30103	10kΩ 5% 0.062W
3913	4822 051 30102	1kΩ 5% 0.062W
3914	4822 051 30102	1kΩ 5% 0.062W
3915	4822 051 30102	1kΩ 5% 0.062W
3916	4822 051 30102	1kΩ 5% 0.062W
3917	4822 051 30102	1kΩ 5% 0.062W
3918	4822 051 30102	1kΩ 5% 0.062W
3934	4822 051 30472	4.7Ω 5% 0.062W
3935	4822 051 30472	4.7Ω 5% 0.062W
3937	4822 051 30103	10kΩ 5% 0.062W
3938	4822 051 30103	10kΩ 5% 0.062W
3942	4822 051 30102	1kΩ 5% 0.062W
3943	4822 051 30103	10kΩ 5% 0.062W
3A01	5322 117 11726	10Ω 5%
3A02	5322 117 11726	10Ω 5%
3A03	4822 051 30103	10kΩ 5% 0.062W
3A04	4822 051 30123	12kΩ 5% 0.1W
3A05	2322 762 60229	22Ω 5% 1005
3A06	4822 051 30103	10kΩ 5% 0.062W
3A07	4822 051 30103	10kΩ 5% 0.062W
3A08	4822 051 30123	12kΩ 5% 0.1W
3A09	4822 051 30109	10Ω 5% 0.062W
3A11	4822 051 30103	10kΩ 5% 0.062W
3A12	4822 051 30105	1MΩ 5% 0.062W
3A13	4822 051 30393	39kΩ 5% 0.062W
3A14	2322 762 60229	22Ω 5% 1005
3A15	4822 051 30105	1MΩ 5% 0.062W
3A17	4822 051 30109	10Ω 5% 0.062W
3A19	4822 051 30103	10kΩ 5% 0.062W
3A26	4822 051 30223	22kΩ 5% 0.062W
3A27	4822 117 12891	220kΩ 1%
3A28	4822 117 12891	220kΩ 1%
3A29	4822 117 12925	47kΩ 1% 0.063W 0603
3A30	4822 117 12925	47kΩ 1% 0.063W 0603
3A31	4822 051 30103	10kΩ 5% 0.062W
3B11	4822 051 30472	4.7Ω 5% 0.062W
3B12	5322 117 13049	470Ω 1% 0.063W 0603
3B13	4822 051 30221	220Ω 5% 0.062W
3B14	2322 704 61002	1kΩ 1%
3B15	4822 051 30102	1kΩ 5% 0.062W
3B17	4822 051 30682	6.8Ω 5% 0.062W
3B18	4822 051 30682	6.8Ω 5% 0.062W
3B19	4822 051 30103	10kΩ 5% 0.062W
3L01	4822 051 30472	4.7Ω 5% 0.062W
3L02	4822 051 30101	100Ω 5% 0.062W
3L04	4822 051 30152	1.5Ω 5% 0.062W
3L05	4822 051 30101	100Ω 5% 0.062W
3L10 ⚠	4822 117 11151	1Ω 5%
3L11	4822 051 30101	100Ω 5% 0.062W
3L15	4822 051 30331	330Ω 5% 0.062W
3L22	4822 051 30008	Jumper 0603
3L23	4822 051 30008	Jumper 0603
4110	4822 051 30008	Jumper 0603
4111	4822 051 30008	Jumper 0603
4112	4822 051 30008	Jumper 0603
4113	4822 051 30008	Jumper 0603
4114	4822 051 30008	Jumper 0603
4120	4822 051 30008	Jumper 0603
4121	4822 051 30008	Jumper 0603
4122	4822 051 30008	Jumper 0603
4123	4822 051 30008	Jumper 0603
4124	4822 051 30008	Jumper 0603
4204	4822 051 30008	Jumper 0603
4205	4822 051 30008	Jumper 0603
4206	4822 051 30008	Jumper 0603
4309	4822 051 30008	Jumper 0603
4310	4822 051 30008	Jumper 0603
4316	4822 051 30008	Jumper 0603
4401	4822 051 30008	Jumper 0603
4402	4822 051 30008	Jumper 0603
4403	4822 051 30008	Jumper 0603
4406	4822 051 30008	Jumper 0603
4407	4822 051 30008	Jumper 0603
4408	4822 051 30008	Jumper 0603
4411	4822 051 30008	Jumper 0603
4803	4822 051 30008	Jumper 0603
4901	4822 051 30008	Jumper 0603
4902	4822 051 30008	Jumper 0603
4903	4822 051 30008	Jumper 0603
4C55	4822 051 30008	Jumper 0603
4C56	4822 051 30008	Jumper 0603
4C61	4822 051 30008	Jumper 0603
4C62	4822 051 30008	Jumper 0603
4L20	4822 051 30008	Jumper 0603
4L21	4822 051 30008	Jumper 0603
4L24	4822 051 30008	Jumper 0603
4L25	4822 051 30008	Jumper 0603

5111	2422 536 01057	0.39μH 5% 0603
5112	2422 549 44197	Bead 220Ω at 100MHz
5114	2422 536 01521	10μH 10% 1207
5115	2422 536 01521	10μH 10% 1207
5118	2422 549 44197	Bead 220Ω at 100MHz
5210	4822 157 11499	Bead 60Ω at 100MHz
5212	4822 157 11499	Bead 60Ω at 100MHz
5213	4822 157 11499	Bead 60Ω at 100MHz
5214	4822 157 11499	Bead 60Ω at 100MHz
5215	2422 549 44197	Bead 220Ω at 100MHz
5216	2422 549 43769	Bead 30Ω at 100MHz
5217	2422 549 44197	Bead 220Ω at 100MHz
5218	4822 157 11499	Bead 60Ω at 100MHz
5219	4822 157 11499	Bead 60Ω at 100MHz
5220	4822 157 11499	Bead 60Ω at 100MHz
5221	4822 157 11499	Bead 60Ω at 100MHz
5222	4822 157 11499	Bead 60Ω at 100MHz
5223	4822 157 11499	Bead 60Ω at 100MHz
5224	4822 157 11499	Bead 60Ω at 100MHz
5225	4822 157 11499	Bead 60Ω at 100MHz
5226	4822 157 11499	Bead 60Ω at 100MHz
5227	4822 157 11499	Bead 60Ω at 100MHz
5228	4822 157 11499	Bead 60Ω at 100MHz
5301	4822 157 11499	Bead 60Ω at 100MHz
5302	4822 157 11499	Bead 60Ω at 100MHz
5304	2422 549 01397	Bead 220Ω at 100MHz
5401	2422 549 42896	Bead 120Ω 100MHz
5402	2422 549 42896	Bead 120Ω 100MHz
5403	3198 018 62290	22μH 5% 1008
5810	2422 549 42896	Bead 120Ω 100MHz
5811	2422 549 42896	Bead 120Ω 100MHz
5812	2422 549 42896	Bead 120Ω 100MHz
5813	2422 549 42896	Bead 120Ω 100MHz
5814	2422 549 42896	Bead 120Ω 100MHz
5815	2422 549 42896	Bead 120Ω 100MHz
5816	2422 549 42896	Bead 120Ω 100MHz
5817	2422 549 42896	Bead 120Ω 100MHz
5818	2422 549 42896	Bead 120Ω 100MHz
5A03	2422 536 01564	22μH 20%

5A04	2422 536 01564	22µH 20%
5A05	4822 157 11716	Bead 30Ω at 100MHz
5A06	4822 157 11716	Bead 30Ω at 100MHz
5A07	2422 549 45186	Bead 100MHz 0805
5B01	2422 535 94134	10µH 20% 0805
5B02	2422 536 00779	10µH 20%
5B03	2422 536 00707	33µH 20%
5B06	2422 536 01516	68µF 20%
5B10	2422 536 01495	22µH 10%
5B11	2422 536 01495	22µH 10%

6103	4822 130 11525	1SS356
6110	4822 130 11397	BAS316
6202	3198 020 55680	BZX384-C5V6
6301	4822 130 11397	BAS316
6306	4822 130 11416	PDZ6.8B
6307	4822 130 11416	PDZ6.8B
6318	9340 548 54115	PDZ6.2B
6511	9340 580 04115	PESD5V0S1BA
6512	9965 000 20150	1N4148WS SOD-323
6513	9965 000 20150	1N4148WS SOD-323
6517	9340 580 04115	PESD5V0S1BA
6801	4822 130 80622	BAT54
6802	4822 130 80622	BAT54
6830	4822 130 80622	BAT54
6831	4822 130 80622	BAT54
6914	4822 130 80622	BAT54
6916	4822 130 11397	BAS316
6919	4822 130 11397	BAS316
6B01	3198 010 10720	SS24
6B02	9340 548 71115	PDZ33B
6B03	5322 130 34337	BAV99

7109	5322 130 60159	BC846B
7113	9352 723 71118	TDA9886T/V4
7114	5322 130 60159	BC846B
7133	9322 104 47668	L78M05CDT
7202	9322 240 94671	CX32-LF
7203	3198 010 42310	BC847BW
7204	9322 245 45668	IS42S16400D-6TL
7205	9322 245 45668	IS42S16400D-6TL
7206	3198 010 42310	BC847BW
7208	4822 130 11155	PDTC114ET
7210	9322 204 71668	SI4835BDY
7308	3198 010 42310	BC847BW
7310		For SW see item 0815
7311	9322 245 53671	M30300SAGP
7312	9322 229 46685	BD45275G
7315		For SW see item 0816
7316	3198 010 42310	BC847BW
7317	3198 010 42310	BC847BW
7320	9340 560 36235	BSH111
7321	9340 560 36235	BSH111
7322	4822 130 11155	PDTC114ET
7323	9322 246 85685	NL27WZ08USG
7410	9322 198 11685	L78L08ACU
7411	9322 243 36671	MSP4450P-VK-E8
7500	5322 130 60159	BC846B
7502	3198 010 42320	BC857BW
7503	5322 130 60159	BC846B
7504	3198 010 42320	BC857BW
7810	9352 668 39118	UDA1334ATS/N2
7811		For SW see item 0822
7812	9965 000 04199	BSN20
7813	9965 000 04199	BSN20
7814	3198 010 42310	BC847BW
7816	3198 010 42310	BC847BW
7817	9322 245 55671	SII9025CTU
7824	9965 000 04199	BSN20
7825	9965 000 04199	BSN20
7850		For SW see item 0821
7851	9965 000 04199	BSN20
7852	9965 000 04199	BSN20
7860	3198 010 42310	BC847BW
7861	3198 010 42310	BC847BW
7901	9322 183 05668	TS482ID
7902	3198 010 42320	BC857BW
7911	3198 010 42310	BC847BW
7912	3198 010 42310	BC847BW
7913	3198 010 42310	BC847BW
7914	3198 010 42310	BC847BW
7915	3198 010 42310	BC847BW
7916	3198 010 42310	BC847BW
7917	3198 010 42320	BC857BW
7919	3198 010 42310	BC847BW
7922	3198 010 42310	BC847BW
7A01	9352 796 42518	TDA8932T/N1
7A05	3198 010 42320	BC857BW
7A06	3198 010 42310	BC847BW
7A07	3198 010 42310	BC847BW
7B01	9322 202 34668	L5973D
7B02	4822 209 17398	LD1117DT33
7B03	4822 130 11057	2N7002
7B04	9322 175 62687	LD1085D2T33
7B05	9322 212 14668	SI4423DY

Side I/O Panel [D]

Various

1301	2422 026 05133	Connector SVHS 4p f
1302	2422 026 05807	Soc. Cinch 3p f YeWhRd
1303	4822 267 31014	Socket Headphone
1304	2422 025 10655	Connector 11p m

2301	4822 126 11785	47pF 5% 50V 0603
2302	4822 126 11785	47pF 5% 50V 0603
2303	4822 122 33761	22pF 5% 50V
2304	4822 126 11785	47pF 5% 50V 0603
2305	3198 016 31020	1nF 25V 0603
2306	3198 016 31020	1nF 25V 0603
2307	2238 916 15641	22nF 10% 25V 0603
2308	2238 916 15641	22nF 10% 25V 0603
2309	5322 126 11583	10nF 10% 50V 0603
2310	5322 126 11583	10nF 10% 50V 0603
2311	3198 016 36890	68pF 50V 0603
2313	3198 016 31020	1nF 25V 0603
2314	3198 016 31020	1nF 25V 0603

3301	4822 051 30759	75Ω 5% 0.062W
3302	4822 051 30759	75Ω 5% 0.062W
3303	4822 051 30109	10Ω 5% 0.062W
3304	4822 051 30101	100Ω 5% 0.062W
3305	4822 051 30109	10Ω 5% 0.062W
3306	4822 051 30101	100Ω 5% 0.062W
3308	4822 051 30151	150Ω 5% 0.062W
3309	4822 051 30333	33kΩ 5% 0.062W
3310	4822 051 30151	150Ω 5% 0.062W
3311	4822 051 30333	33kΩ 5% 0.062W
3312	4822 051 30103	10kΩ 5% 0.062W
3313	4822 051 30103	10kΩ 5% 0.062W
4308	2422 549 42896	Bead 120Ω 100MHz
4309	2422 549 42896	Bead 120Ω 100MHz

6301	9322 146 61685	DF3A6.8FU
6302	9322 146 61685	DF3A6.8FU
6303	9322 146 61685	DF3A6.8FU
6304	9322 146 61685	DF3A6.8FU
6305	9322 146 61685	DF3A6.8FU
6306	9322 146 61685	DF3A6.8FU
6307	9322 146 61685	DF3A6.8FU

Keyboard Control Panel [E]

Various

1011	4822 276 13775	Switch 1p 0.1A 12V
1012	4822 276 13775	Switch 1p 0.1A 12V
1013	4822 276 13775	Switch 1p 0.1A 12V
1014	4822 276 13775	Switch 1p 0.1A 12V
1015	4822 276 13775	Switch 1p 0.1A 12V
1016	4822 276 13775	Switch 1p 0.1A 12V
1M01	2422 025 10775	Connector 3p m

2001	4822 126 13881	470pF 5% 50V

3010	4822 051 30391	390Ω 5% 0.062W
3011	4822 051 30561	560Ω 5% 0.062W
3012	3198 021 31820	1.8kΩ 5% 0.062W 0603
3013	4822 051 30151	150Ω 5% 0.062W
3014	4822 117 12968	820Ω 5% 0.62W
3015	4822 051 30008	Jumper 0603
3016	4822 051 30008	Jumper 0603
3017	4822 051 30008	Jumper 0603
4001	4822 051 30008	Jumper 0603

6011	4822 130 11564	UDZ3.9B
6012	4822 130 11564	UDZ3.9B
6014	3198 020 55680	BZX384-C5V6
6015	3198 020 55680	BZX384-C5V6
6016	3198 020 55680	BZX384-C5V6
6017	3198 020 55680	BZX384-C5V6
6018	3198 020 55680	BZX384-C5V6

IR LED Panel [J]

Various

1M01	2422 025 10775	Connector 3p m
1M01	2422 025 18146	Connector 3p m Wh
1M20	2422 025 18151	Connector 7p m Wh
1M20	4822 265 41343	Connector 7p m

2001	2020 552 00134	22µF 20% 6.3V 0805

3010	4822 051 30331	330Ω 5% 0.062W
3011	4822 051 30682	6.8Ω 5% 0.062W
3012	4822 051 30682	6.8Ω 5% 0.062W
3013	4822 117 12968	820Ω 5% 0.62W
3014	4822 051 30103	10kΩ 5% 0.062W
3019	4822 051 30151	150Ω 5% 0.062W
3020	4822 051 30151	150Ω 5% 0.062W
4001	4822 051 30008	Jumper 0603
4002	4822 051 30008	Jumper 0603
4004	4822 051 30008	Jumper 0603
4005	4822 051 30008	Jumper 0603
4010	4822 051 30008	Jumper 0603
4012	4822 051 30008	Jumper 0603
4015	4822 051 30008	Jumper 0603
4017	4822 051 30008	Jumper 0603
4019	4822 051 30008	Jumper 0603

6010	9322 243 77676	LED L-174A2PBC
6011	9322 244 07676	LED L-174A2IT-TNB5-19
6012	4822 130 11148	UDZ4.7B

7010	9322 243 06671	IR Receiver
7011	5322 130 60159	BC846B
7012	5322 130 60159	BC846B

11. Revision List

Manual xxxx xxx xxxx.0

- First release.